LOWER BERRYESSA CREEK PROJECT

Biological Assessment for the U.S. Fish and Wildlife Service

Prepared for
Santa Clara Valley Water District

December 2011

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ACRONYMS AND ABBREVIATIONS

BA	biological assessment
BMPs	best management practices
CDFG	California Department of Fish and Game
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
District	Santa Clara Valley Water District
FESA	Federal Endangered Species Act
NMFS	National Marine Fisheries Service
PSR	(Lower Berryessa Creek) Planning Study Report
RWQCB	Regional Water Quality Control Board
SMP	Stream Maintenance Program
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VTA	Valley Transit Authority

CHAPTER 1

Summary of Findings and Conclusions

The Lower Berryessa Creek Project (proposed action) consists of the Lower Berryessa Creek and Lower Calera Creek elements, and is part of the Santa Clara Valley Water District's (District) larger Lower Berryessa Creek Program, which proposes construction and maintenance of water and flood control facilities in creeks within the City of Milpitas, in Santa Clara County.

Available reports and survey results were consulted to determine federally-listed species potentially present in the vicinity of the proposed action. Habitat suitability for listed species known or expected in the area was evaluated, to determine the likelihood of listed species occurrence in the vicinity of the proposed action. In summary, no listed species were observed in the proposed action area during surveys, no listed plants are expected to occur within the proposed action area, and no critical habitat for listed species is present within the action area. Only one listed species was determined to have at least a low potential to occur in the action area; this biological assessment (BA) assesses potential effects on one listed species:

- California red-legged frog (*Rana draytonii*), federally threatened

After discussion of potential effects of the proposed action, reasonable and prudent measures are described to reduce effects on the California red-legged frog. If these measures are implemented, the proposed action is not likely to adversely affect the California red-legged frog.

The following chapters of this BA will describe this determination in greater detail. *Chapter 2* provides an introduction to the proposed action; *Chapter 3* defines the action area and describes what data were used for analyses of species and habitats; *Chapter 4* describes habitats present in the vicinity of the proposed action; *Chapter 5* lists species considered in the assessment; *Chapter 6* describes potential effects of listed species from implementation of the proposed action, and measures to minimize those effects; *Chapter 7* describes the determination; and *Chapter 8* lists references and report preparers.

CHAPTER 2
Introduction

2.1 Project Sponsor

The Lower Berryessa Creek Project is sponsored by the District. The contact person is:

Mr. David Dunlap
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, California 95118-3686
(408) 265-2607 x2845

2.2 Purpose of the Biological Assessment

Section 7 of the federal Endangered Species Act (FESA) (16 U.S.C. 1536(c)) of 1973 as amended) requires federal agencies, in consultation with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) to ensure that their actions do not jeopardize the continued existence of threatened or endangered species, or result in destruction of designated or proposed critical habitat. This BA provides information intended to be used in association with these regulatory processes for the proposed action.

During construction, the proposed action will affect jurisdictional waters of the United States, as defined by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. Temporary construction, access, and placement of fill within areas of the USACE jurisdiction are necessary in order to construct proposed improvements along Lower Berryessa and Lower Calera creeks; therefore, the District must obtain a Section 404 permit from the USACE. In order to issue this permit, the USACE must consult with USFWS pursuant to Section 7 of the FESA for any species that may be affected by the proposed action.

This BA has been prepared on behalf of the District to support the USACE's consultation with the USFWS and in accordance with legal requirements set forth under regulations implementing Section 7 of FESA.

The objectives of this BA are to:

- Provide information to the USFWS about biological field survey results conducted for the proposed action.

- Determine whether the species addressed in this BA are likely to be adversely affected by the proposed action.
- Describe conservation measures for the proposed action that will avoid or minimize effects on listed species and their habitats.

2.3 Purpose and Scope of the Proposed Action

The Lower Berryessa Creek Project (proposed action) consists of the Lower Berryessa Creek and Lower Calera Creek elements, and is part of the Santa Clara Valley Water District's (District) larger Lower Berryessa Creek Program, which proposes construction and maintenance of water and flood control facilities in creeks within the City of Milpitas, in Santa Clara County. The basic purpose for the proposed action is flood protection. The overall project purpose is to increase flood flow capacity within Lower Berryessa and Lower Calera creeks to contain the one percent flood, also known as the 100-year flood[1], with adequate freeboard to meet the District's requirements. The District is in the process of planning and approving separate projects under the overall Lower Berryessa Creek Program that would alleviate flooding concerns in Lower Penitencia, Upper Calera, and Tularcitos creeks.

The Lower Berryessa Creek Project consists of the Lower Berryessa Creek and Lower Calera Creek elements, and is located in the Coyote Creek watershed, in Santa Clara County, as depicted in **Figure 1**.

The need for the proposed action is grounded in the findings of the District's 2010 Lower Berryessa Creek Planning Study Report (PSR), which found inadequate capacity within the Lower Berryessa Creek system to convey the current calculations of 100-year storm flows.

For 35 years, the District has been implementing flood protection improvements within the Berryessa Creek watershed to contain the 100-year flood. The District constructed the levees on Lower Berryessa Creek in 1976 to provide 100-year flood protection based upon data derived from hydrologic models using the best available information from that period. In 1997, based on revised hydrology and hydraulic data available at the time, the District implemented a levee restoration project by raising levees by up to 1.5 feet.

In February 2001, the District initiated an engineering planning study to investigate the condition of levees and channel capacity, develop solutions to improve flood protection, and achieve other project objectives such as improved maintenance access. A hydrologic study was completed in 2003 for the contributing watershed, and provides information on the hydrology methodology and design flow calculations. This hydrologic study accounts for the proposed Corps of Engineers and District joint project on Upper Berryessa Creek, which will result in greater flows in Lower Berryessa Creek. In 2006, the Corps and the District modified the design flows as developed by the earlier hydrology study to account for possible future drainage improvements along tributaries to

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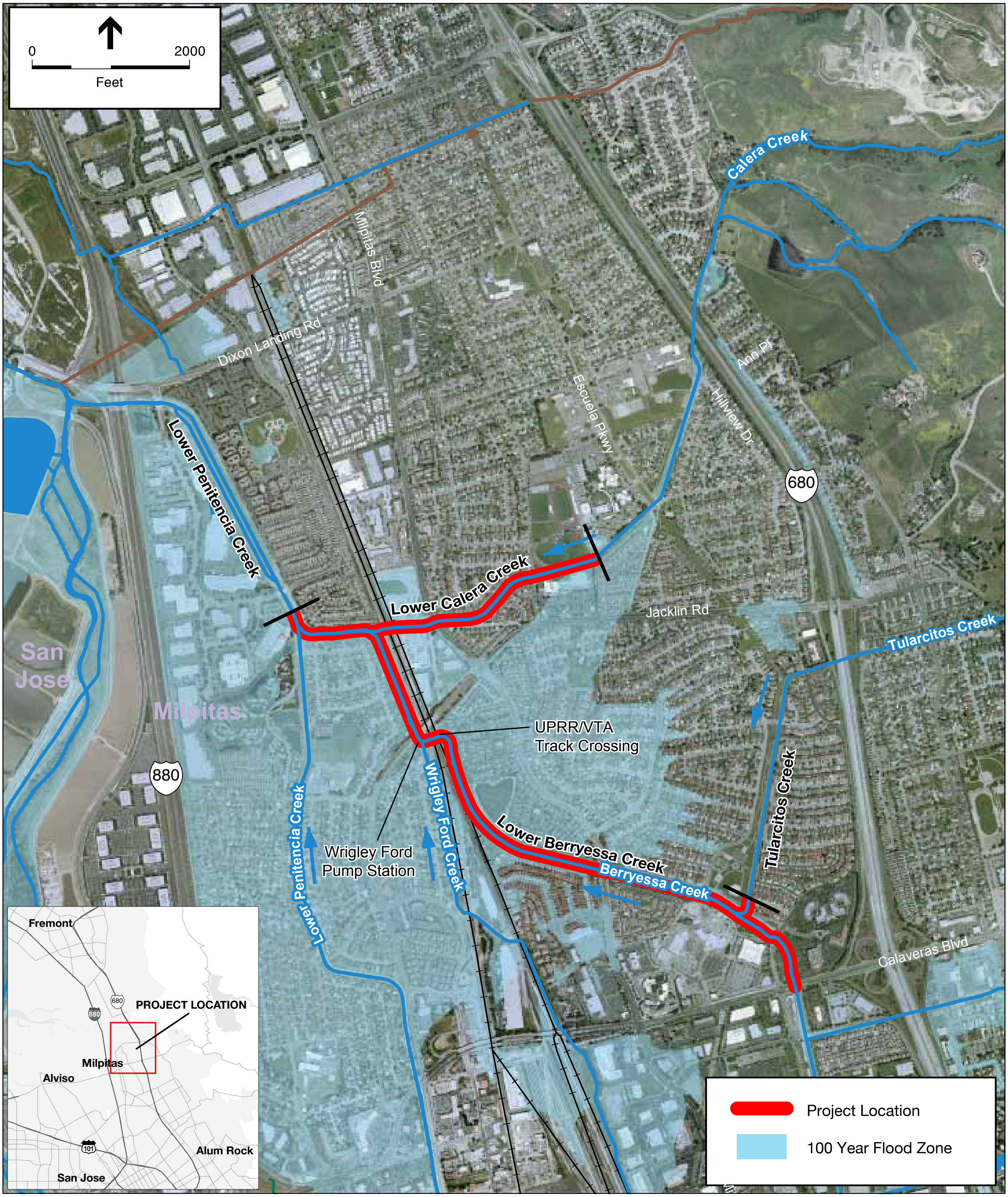
[1] A one-percent or 100-year flood is the calculated maximum level of floodwater with a one-percent probability of occurring in any given year.



SOURCE: ESA

Lower Berryessa Creek Project . 201425

Figure 1
Project Area

Berryessa Creek. The updated values were further refined by the Corps and the District to account for future adjustments in statistical hydrology and hydraulic modeling techniques. The PSR summarizes these studies and finds that Lower Berryessa Creek does not have adequate capacity to convey the most currently calculated design flow and the District's freeboard requirements. The PSR then presents the recommended solutions to address the design flow issues (Winzler and Kelly, 2010).

The 2010 PSR recommendations include the implementation of the Lower Berryessa Creek and Lower Calera Creek Improvements, as proposed under this Project. Project Implementation would provide flood protection improvements necessary to attain adequate freeboard, meeting District requirements, as well as improving access roads for maintenance of flood control channels, as further discussed below.

Implementation of improvements required to contain the design flows along Lower Berryessa Creek would result in backwater effects on Lower Calera Creek and Tularcitos Creek[2] and downstream flooding effects in Lower Penitencia Creek[3]. In Lower Calera Creek, the backwater effects would extend from the confluence with Berryessa Creek to the existing drop structure at Milpitas High School. As noted above, the District is in the process of planning and approving separate projects under the overall Lower Berryessa Creek Program that would alleviate flooding concerns in Lower Penitencia, Upper Calera, and Tularcitos creeks.

Without the improvements proposed along Lower Calera Creek under this Project, these backwater effects would result in flooding in the project area. In addition, Lower Berryessa and Lower Calera creeks frequently require sediment removal from the channel bottoms to maintain design flow capacity; however, this process is currently impeded by a lack of suitable access for equipment. Improvements to existing maintenance roads are necessary to access the existing and future facilities, which would ensure proper maintenance and flood control channel function.

In summary, the implementation of the Lower Berryessa Creek and Lower Calera Creek project elements would improve access for long-term channel maintenance, would provide flood protection for peak design flows, and would meet the District's minimum freeboard requirements along channels and upstream of bridge structures. These improvements would be funded by the District's Watershed and Stream Stewardship Fund.

2.4 Consultation History

This BA was prepared based on the documented, observed, or suspected presence of threatened and endangered plant, wildlife, and fish in the vicinity of the proposed action.

The following summarizes consultation history regarding the proposed action to date:

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[2] Improvements would result in backwater effects or an obstruction of flow resulting in the raising of surface water elevations upstream in Calera and Tularcitos creeks.

[3] Lower Penitencia Creek would also be subject to future flooding under projected design flows.

- November 19, 2010 letter, *Species List for Lower Berryessa Creek Project* (Document Number 101116022158) to Bryan Olney from the U.S. Fish and Wildlife Service (USFWS) Sacramento Office. (Appendix A)

2.5 Description of the Proposed Action

The proposed action mainly includes improvements within two creeks: Lower Berryessa Creek and Lower Calera Creek. Short segments of Tularcitos Creek and Lower Penitencia Creek at their confluences with Lower Berryessa Creek will also be improved. Below, improvements within each section of creek is described, as well as the anticipated construction activities. The proposed construction activities within the Lower Berryessa Creek confluences with Tularcitos and Lower Penitencia creeks is included in the discussion of Lower Berryessa Creek. Detailed plan sheets for the proposed improvements are included as Appendix B.

2.5.1 Lower Berryessa Creek

The Project would provide flood control improvements along approximately 8,820 feet of Lower Berryessa Creek from the downstream face of the bridge crossing of Calaveras Boulevard at the upstream end to the confluence of Lower Penitencia Creek and Lower Berryessa creek at the downstream end, and including both a short (30 foot) section of Lower Penitencia Creek at its confluence of Lower Berryessa Creek and a short (75 foot) section of Tularcitos Creek at its confluence with Lower Berryessa Creek. Improvements within this stretch of Lower Berryessa Creek have been broken into seven reaches depicted in **Figure 2**, and would include actions as depicted in **Figures 3A through 3C**, and as summarized below:

> *Reconstructing levees and replacing existing levees with floodwalls*[4]. Levees along the right bank (facing downstream) of the channel would be raised for the entire length of Lower Berryessa Creek, with the exception of Reach C, where levees on both sides were replaced with floodwalls as a part of the Santa Clara Valley Transportation Authority (VTA) channel realignment and culvert construction project, completed in 2010 in partnership with the District. Reconstructed levees would be up to 12 feet higher than the adjacent outside elevation. A short segment of levee slope near Abel Street would include boulders that are buried or keyed into the bank, to provide additional bank stability. This element would also include hydroseeding of levee slopes. Floodwalls would be constructed along the left bank (facing downstream) of the channel along the entire length of this project element. The height of the floodwalls would vary from approximately 5 to 8 feet above the adjacent elevation along the outside face of the walls. Although the channel width as measured from top of bank will remain the same, reconfiguring the channel through levee reconstruction and/or replacement would increase the channel's capacity by increasing the width at the channel bottom. Along Lower Berryessa Creek at the Hetch-Hetchy Right of Way (ROW), floodwalls would be constructed at the top of the existing concrete levee.Modifications to levees and floodwalls within approximately 30 feet of Lower Penitencia Creek at its confluence with Lower Berryessa Creek would occur, including raising the east bank and the existing guide vane along Lower Penitencia

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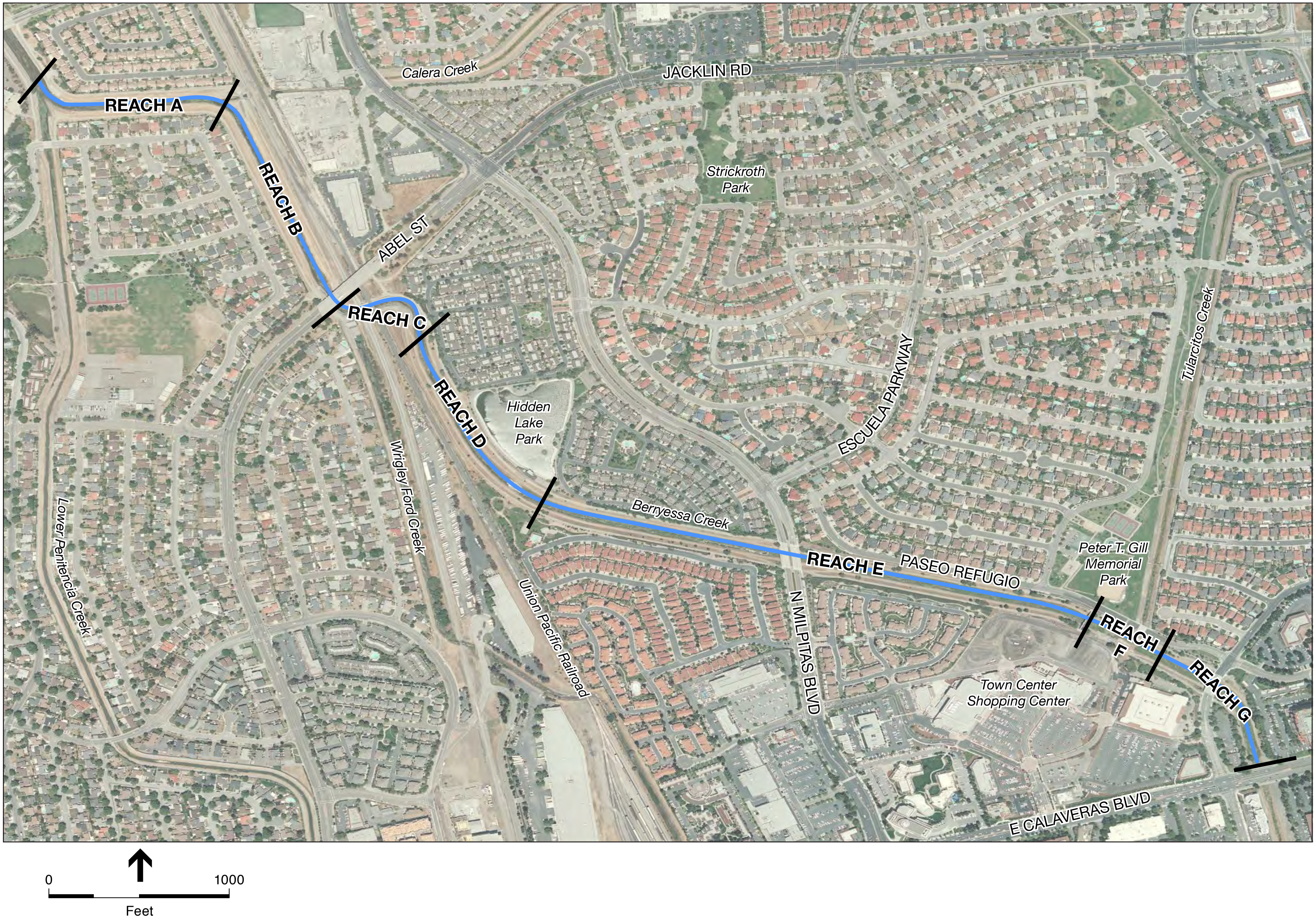
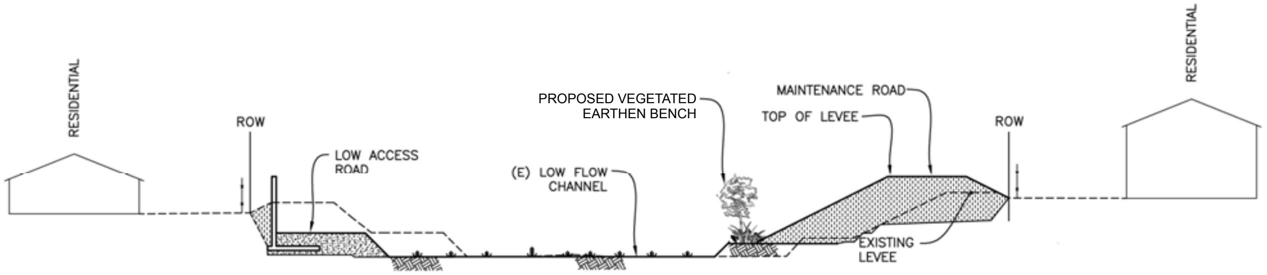
[4] The Valley Transit Authority (VTA) recently implemented a channel realignment and culvert construction project where Lower Berryessa Creek crosses under the Union Pacific Railroad bridges along Reach C. The VTA project, including new box culverts and associated channel improvements, was completed in 2010.



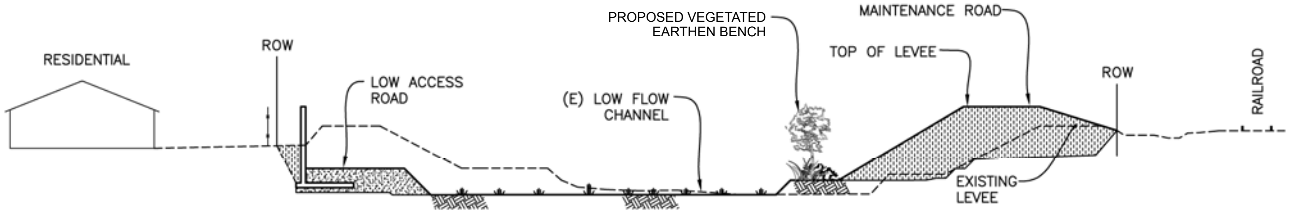
SOURCE: GlobeXplorer; ESA

Lower Berryessa Creek Project . 201425

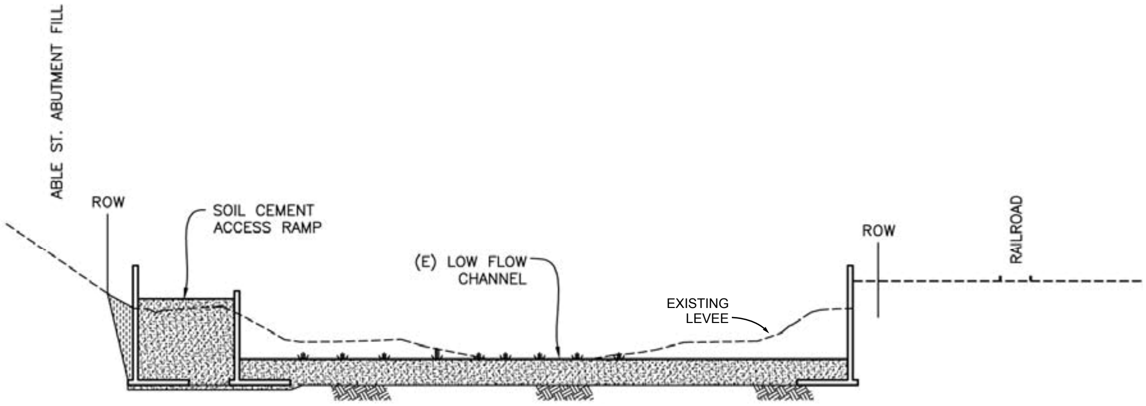
Figure 2
Lower Berryessa Creek



TYPICAL SECTION REACH A
Looking Downstream



TYPICAL SECTION REACH B
Looking Downstream



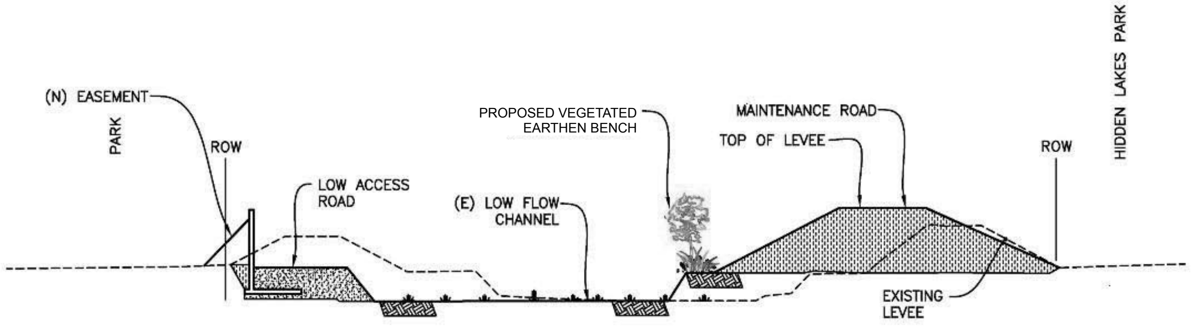
TYPICAL SECTION REACH C
Looking Downstream

SOURCE: Winzler & Kelly

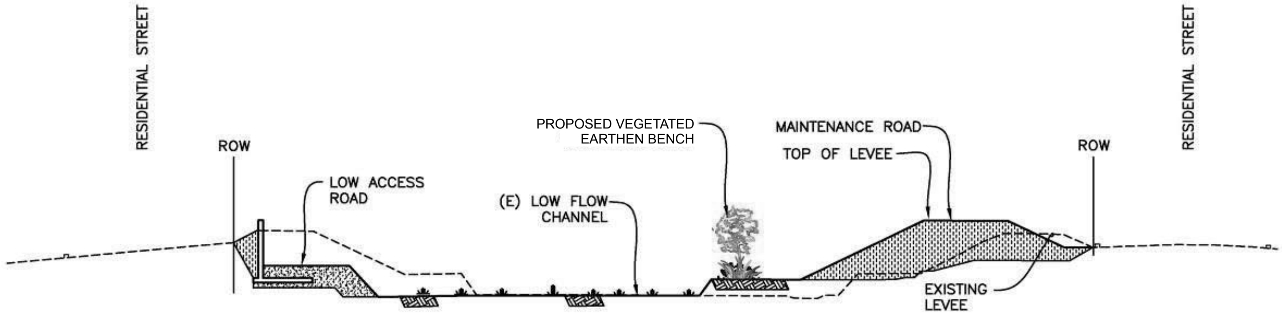
Lower Berryessa Creek Project . 201425

Figure 3a

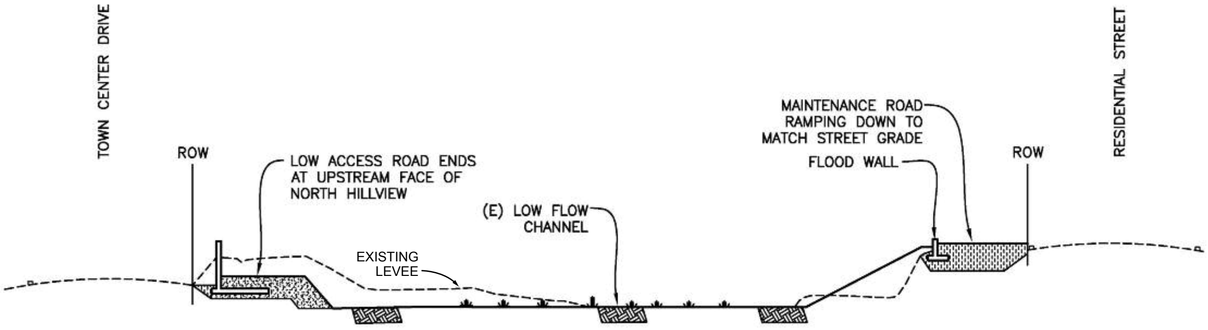
Lower Berryessa Creek Element
Typical Sections



TYPICAL SECTION REACH D
Looking Downstream



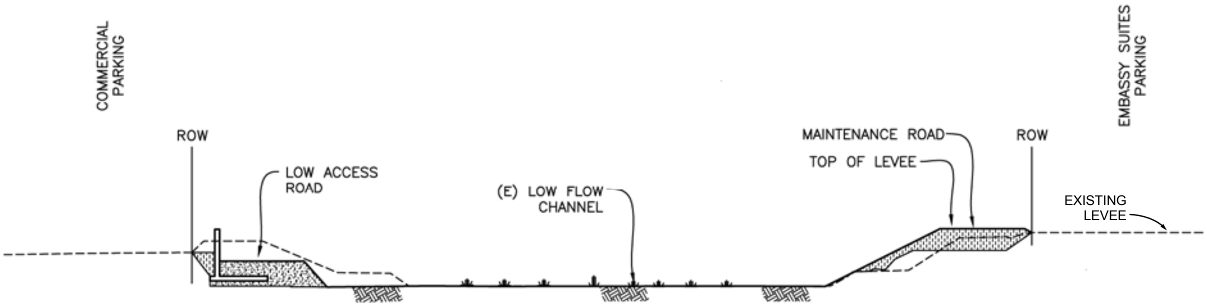
TYPICAL SECTION REACH E
Looking Downstream


TOWN CENTER DRIVE
ROW
LOW ACCESS ROAD ENDS AT UPSTREAM FACE OF NORTH HILLVIEW
EXISTING LEVEE
(E) LOW FLOW CHANNEL
MAINTENANCE ROAD RAMPING DOWN TO MATCH STREET GRADE
FLOOD WALL
ROW
RESIDENTIAL STREET

TYPICAL SECTION REACH F
Looking Downstream

SOURCE: Winzler & Kelly

Figure 3b
Lower Berryessa Creek Element
Typical Sections



TYPICAL SECTION REACH G
Looking Downstream

SOURCE: Winzler & Kelly

Figure 3c
Lower Berryessa Creek Element
Typical Sections

Creek such that the transition between Lower Penitencia Creek and the proposed modified flood control improvements along Lower Berryessa Creek is improved.

Modifications to levees and floodwalls would also be made within approximately 75 feet of Tularcitos Creek at its confluence with Lower Berryessa Creek, where transitions to the modified structures, as described above, would be made.

- *Construction of a low earthen bench within the channel that would help create and maintain the low flow channel within the creek*. The District would create a low earthen bench within the widened channel, and subsequently allow the low bench to revegetate naturally. If natural revegetation does not successfully occur within 2 years as expected, the District would plant and/or seed the bench with native herbaceous wetlands species. The low bench would range in width from 6 to 18 feet, and would be installed with the construction of facility components. Maintenance of the benches and ROW would include removal of woody vegetation within the District ROW that could reduce channel capacity. Existing vegetation would be preserved where vegetation does not affect the function of the channel and improvements. The Project would also include hydroseeding of levee slopes following construction.

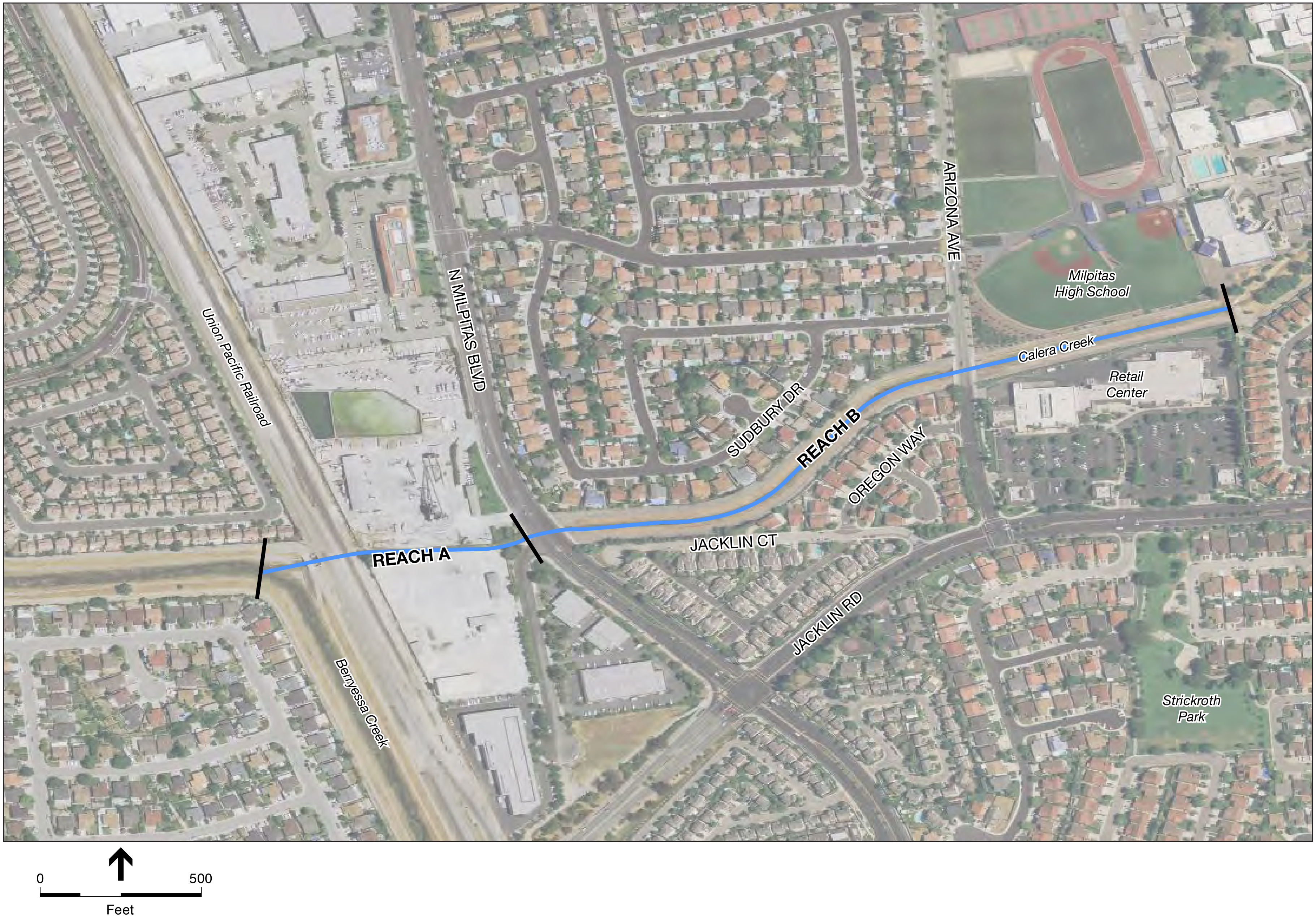
- *Improvements to existing maintenance roads*. To improve access for ongoing maintenance measures, the existing maintenance roads would be modified and improved to accommodate one 18-foot wide low access road along the inside of the new floodwall and one access road on top of the reconstructed levee. The lower maintenance road would be improved to include 30-foot wide by 70-foot long turnouts. The turnouts would be spaced at approximately every 500 feet over the length of the channel. The lower maintenance road would ramp up for access from San Andreas Drive, Abel Street, North Milpitas Boulevard, North Hillview Drive and the pedestrian bridge across from Peter T. Gill Park. The upper maintenance road located on the top of the reconstructed levee could serve as a portion of the trail system identified in the City of Milpitas Trail Master Plan.

- *Bridge Improvements.* To match the new maintenance road elevation at the top of the reconstructed levee, the existing maintenance road bridge near the confluence of Lower Berryessa Creek and Lower Calera Creek would be raised, by replacing the existing bridge abutments. Construction of this element would also include raising the pedestrian bridge across from Peter T. Gill Park, and a new headwall along the upstream face of the North Milpitas Boulevard Bridge.

2.5.2 Lower Calera Creek

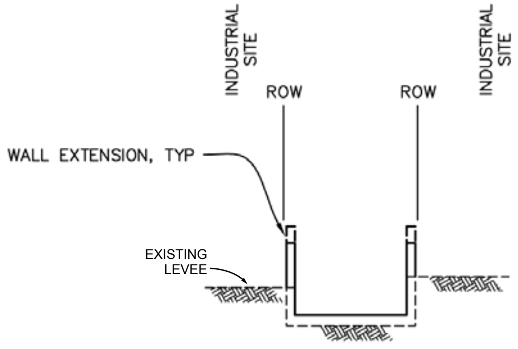
The proposed action would provide improvements along approximately 2,835 feet of Lower Calera Creek from the drop structure behind Milpitas High School at the upstream end, to its confluence with Lower Berryessa Creek at the downstream end. Improvements within this stretch of creek have been broken into two reaches, depicted in **Figure 4**, and would include actions as depicted in **Figure 5**, and as summarized below:

- *Reconfiguring the channel and constructing concrete floodwalls along each side of the existing channel*. Along Reach A, from the confluence with Lower Berryessa Creek to North Milpitas Boulevard, improvements would include extending the existing channel walls by up to 4 feet and constructing new headwalls at the culverts at the railroad crossing and at North Milpitas Boulevard. Along Reach B, downstream of Arizona Avenue, new floodwalls on both sides of the channel would vary in height from approximately 3 feet to 6.5 feet. Upstream of Arizona

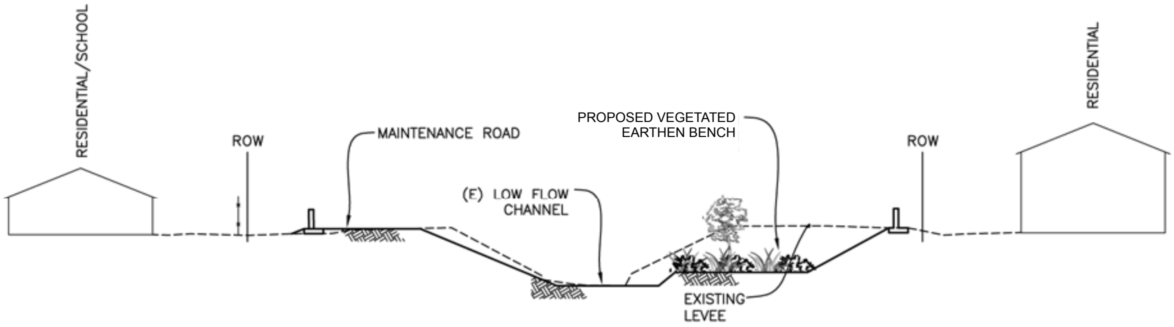


SOURCE: GlobeXplorer; ESA

Figure 4
Lower Calera Creek



TYPICAL SECTION REACH A
Looking Downstream



TYPICAL SECTION REACH B
Looking Downstream

SOURCE: Winzler & Kelly

Figure 5
Lower Calera Creek Element
Typical Sections

Avenue, floodwalls would range from 3.5 feet to almost 6 feet on the south side of the channel, and from 2 feet to 5 feet on the north side of the channel. The levee on the south bank would be slightly excavated and the levee on the north bank would be removed to accommodate increased channel capacity.

- *Construct new headwalls*. New headwalls would be constructed at the upstream face of the culvert under North Milpitas Boulevard and at the upstream and downstream faces of the culvert under Arizona Avenue.
- *Construction of a low earthen bench within the channel that would help create habitat and maintain the low flow channel within the creek.* This element would include the creation of a 15 to 30-foot wide low earthen bench on the north side of the channel near the existing low flow channel that would be constructed to help maintain the low flow channel and allow for the establishment of wetland vegetation. The District would allow the low earthen bench to revegetate naturally. If natural revegetation does not successfully occur within 2 years as expected, the District would plant and/or seed the bench with native herbaceous wetlands species. Maintenance of the benches and ROW would include removal of woody vegetation within the District ROW that could reduce channel capacity. Existing vegetation would be preserved where vegetation does not affect the function of the channel and improvements. The Project would also include hydroseeding of levee slopes following construction.
- *Construction of a maintenance road.* To improve access for ongoing maintenance measures, a permanent 18-foot wide access road would be constructed on the south side of the channel upstream of North Milpitas Boulevard. Access to this road would be provided at each street crossing via ramped sections over floodwalls. A 5-foot wide access path would also be provided on the north side of the channel upstream of North Milpitas Boulevard.

2.5.3 Construction Activities

Details of construction activities are as follows:

Creek Levee Raising/Reconstruction

Construction of the new raised levees would entail at least partial excavation of the existing levees, as well as preparation of the levees to receive new embankment fill. Where no new floodwalls are planned, the existing levee material would be removed down to grade level. Where floodwalls would be installed and levees retained, the excavation of the existing levees would accommodate the floodwall footings and supports below existing grade. Where floodwalls replace levees entirely, the entire levee would be excavated. The new raised levees would be reconstructed using lime treated stockpiled soils, imported fill, or a combination of the two. To the extent feasible, material excavated from the existing levees would be used to reconstruct the new levees. However, it is anticipated that additional fill material would be needed. Once the levees are reconstructed, they would be contoured to a 2:1 slope and compacted to ensure the levees' structural stability. The levee slopes would be hydroseeded for erosion protection.

Floodwall Construction

Prior to the construction of the new floodwalls, the existing levees under proposed floodwalls would be completely removed as described above. Floodwalls and floodwall support footings would be constructed of reinforced concrete and would be installed using pour in place methods. The concrete floodwalls would entail construction of concrete forms constructed from steel rebar. Once floodwall forms are in place, concrete would be delivered to the site and would be poured into the forms. Once the concrete has set, the forms would be removed and disposed.

Maintenance Road Improvements

Improvements to the existing maintenance roads would include a reduction in the number of maintenance roads (from 4 to 2) within most channel reaches. In addition, improvements propose the regrading and recontouring of access roads, to provide increased access along the project reaches. Lower maintenance roads (within the channel) would be constructed of soil cement using stockpiled soil; upper maintenance roads (on top of levees) would be constructed of aggregate base, or paved with asphalt. Maintenance roads would be designed to the District standard with a minimum width of 18 feet. Along Lower Berryessa Creek, construction of maintenance road improvements would include turnouts that would be 30 feet wide by 70 feet long and constructed approximately every 500 feet, to accommodate the maneuvering of large equipment and to reduce trip lengths along access roads. Maintenance road improvements would also be designed to accommodate City of Milpitas trail design guidelines, including surface material and width/grade of the maintenance road.

Low Earthen Bench

As described above, within the description of Lower Berryessa and Lower Calera Creek improvements, a low earthen bench would be established within the channel during project construction. The purpose of the low earthen bench is to help create and/or maintain the low flow channel within the creek, while also providing an opportunity for in-stream micro-topography and vegetated habitat to establish. The District would allow the bench to naturally revegetate; if the earthen benches do not successfully revegetate as a result of natural recruitment within 2 years of project completion, the District would seed and/or plant the bench with native species. Maintenance of the benches and ROW would include removal of woody vegetation within the District ROW that could reduce channel capacity. Existing vegetation would be preserved where vegetation does not affect the function of the channel and improvements.

Headwall Construction

New headwalls would be constructed within the Lower Berryessa and Lower Calera creeks. The headwalls would be installed using form work and concrete equipment.

Pedestrian Bridge Reconstruction

To accommodate the height of the proposed levees, the existing pedestrian bridges (including bridge footings and abutments), would be removed and the bridge crossing would be stored prior to levee construction. Reinstallation of the pedestrian bridges would occur after the construction of new concrete abutments which match the height of the proposed levees. Upon completion of levee construction, the bridge crossings would be reinstalled on the new concrete abutments at the bridges’ previous location.

Dewatering Activities

As described above, in channel work would typically occur between mid-June and mid-October when channel flow is low or not present. However, some dewatering could be required. All dewatering activities would be temporary in nature, confined to a small area, and occur only during dry season months (mid-June to mid-October). All water which accumulates in project excavations would be removed and creek flows and runoff diverted around the work areas. The creek flow in the project area would be temporarily diverted around the work area by using one of the following types of diversions: temporary durable plastic K-rail barrier system, water-tight cofferdam, or inflatable bladder dam. These diversions would remain in place throughout the in-stream construction period.

2.5.4 Construction Materials and Disposal

Construction Equipment

The construction equipment required for construction of each reach would depend on the improvement type and construction activity proposed. The following is a summary of the equipment types that could be used during construction of the overall project:

- Articulated trucks
- Backhoes
- Bulldozers
- Crane
- Compactors
- Concrete trucks
- Excavators
- Fence post auger
- Gradeall
- Graders
- Hand equipment
- Loaders
- Paver
- Pumps
- Pugmill
- Scrapers
- Soil stabilizer

Lower Berryessa Creek

Reconstructing the levees along Lower Berryessa Creek would result in approximately 164,000 cubic yards of material cut from the existing levee on the floodwall side (southwest) and a portion of the existing levee on the reconstructed levee side (northeast). Some of this material would be used onsite as fill to increase the height and width of the existing levee. The Lower Berryessa Creek Project Element would require an estimated 184,000 cubic yards (23, 000 truckloads) of fill, including native soil, cement, soil treatment, concrete, and other construction supplies.

Lower Calera Creek

Construction within Lower Calera Creek would result in approximately 2,200 cubic yards of material that would be cut from one side of the creek upstream of Milpitas Boulevard and approximately 2,000 cubic yards of material that would be excavated for floodwalls. Minor quantities of this material would be used onsite as fill. Lower Calera Creek would require an estimated 4,200 cubic yards (700 truckloads) of fill, including native soil, cement, soil treatment, concrete, and other construction supplies.

2.5.5 Duration of Construction

Major construction activities, which would span seven months or greater, would be implemented over two construction seasons, typically from mid-April to mid-October. No work is proposed between late October and early April, in order to avoid in-channel work during the rainy season. Work in each of the two major channel segments (Lower Berryessa and Lower Calera creeks) would happen in separate construction seasons; in other words, work within the two channel segments would not be conducted concurrently, in order to avoid the potential for compounded impacts to habitat or water quality within the drainage system. The specific type of construction activity would dictate the number of workers required and the duration of activities. **Tables 1 and 2** summarize each construction activity, as well as estimated timeframes, crew size, and equipment requirements for each activity. **Tables 1and 2** also provide the estimated areas of ground disturbance and estimated truck loads for each activity.

TABLE 1
LOWER BERRYESSA CREEK CONSTRUCTION DURATION, CREW, AND EQUIPMENT BY ACTIVITY

Site/ Construction Activity	Description	Ground Disturbance Area (square feet and acres)	Truck Loads and Excavation Quantities (cubic yards)	Estimated Construction Duration	Estimated Construction Crew Size	Estimated Number and Type of Construction Equipment
Site Prep	Clear all vegetation on site, site demolition			2 months		Bulldozer (2) Loader (2) Articulated truck (10)
Earthwork	Clear and grub, excavate, haul and spoil, backfill, soil cement, shoring, grading, erosion control, rip rap			4 months		Excavator (2) Articulated truck (12) Bulldozer (2) Scraper (2) Compactor (2) Grader (2) Pugmill (1) Soil stabilizer (1) Pumps (2) Gradeall (1)
Site Improvements and Amenities	Base courses, flexible paving, fences and gate, fabricated bridges, landscape grading			2 months		Truck (8) Fence post auger (1) Soil stabilizer (1) Crane (1)
Planting	Hydroseeding,			4 months		Truck (8) Backhoe (2)
Concrete Placement	Construct the floodwall, trapezoidal channel, channel transitions and miscellaneous concrete improvements			4 months		Excavator (1) Concrete truck (4) Loader (1) Compactor (1) Hand equipment (2) Pump (2)
TOTAL		923,450 square feet 21.2 acres	20,300 truck loads and 164,000 cubic yards of exported fill	16 months	50 contractor and contract workers	

TABLE 2
LOWER CALERA CREEK CONSTRUCTION DURATION, CREW, AND EQUIPMENT BY ACTIVITY

Site/ Construction Activity	Description	Ground Disturbance Area (square feet and acres)	Truck Loads and Excavation Quantities (cubic yards)	Estimated Construction Duration	Estimated Construction Crew Size	Estimated Number and Type of Construction Equipment
Site Prep	Clear site, site demolition			1 month		Bulldozer (1) Loader (1) Articulated truck (8)
Earthwork	Clear and grub, excavate, haul and spoil, backfill, grading, erosion control			2 months		Excavator (1) Articulated truck (10) Bulldozer (1) Compactor (1) Pump (2)
Site Improvements	Install vegetated strip, aggregate base placement along the Lower Calera Creek alignment for the North access road in some locations, hydroseeding, fences and gates			2 months		Articulated truck (8) Loader (1) Gradeall (1) Compactor (1) Soil stabilizer (1) Truck (8) Backhoe (1)
Concrete Placement	Construct concrete floodwalls, headwalls, and bridge slabs			3 months		Excavator (1) Articulated truck (8) Gradeall (1) Concrete truck (3) Compactor (1) Hand equipment (2)
TOTAL		206,700 square feet 4.74 acres	700 truck loads and 4,200 cubic yards of exported fill	8 months	40 contractor and contract workers	

2.5.6 Project Staging

The approximate project staging and storage areas identified for the Lower Berryessa and Lower Calera Creek project elements are shown on **Figure 6**. **Table 3** provides a summary of the location and area for construction staging. Staging areas consist of an area on the south side of Abel Street, an area on Hanson Court, at the end of the cul-de-sac, an area in a 30-foot strip along Arizona Avenue, along the north bank of Lower Calera Creek, and an area within the former Mervyn's parking lot, on the east bank of Lower Berryessa Creek. Worker and equipment parking would be provided on project access roads within District ROW and within staging and storage areas only. Worker access would be provided to the site via the existing levee maintenance roads and two 15-foot wide, approximately 8,500-foot long temporary access roads along both sides of the Lower Berryessa Creek channel.

TABLE 3
SUMMARY OF STAGING AREAS

Staging Area	Location	Total Area (square feet)	Element
A	Mervyn's Parking Lot	9,600	Lower Berryessa Creek
B	Abel Street	16,875	Lower Berryessa/Lower Calera Creek
C	Hanson Court	33,750	Lower Berryessa Creek /Lower Calera Creek
D	Arizona Ave	20,250	Lower Calera Creek

2.5.7 Required Maintenance Activities

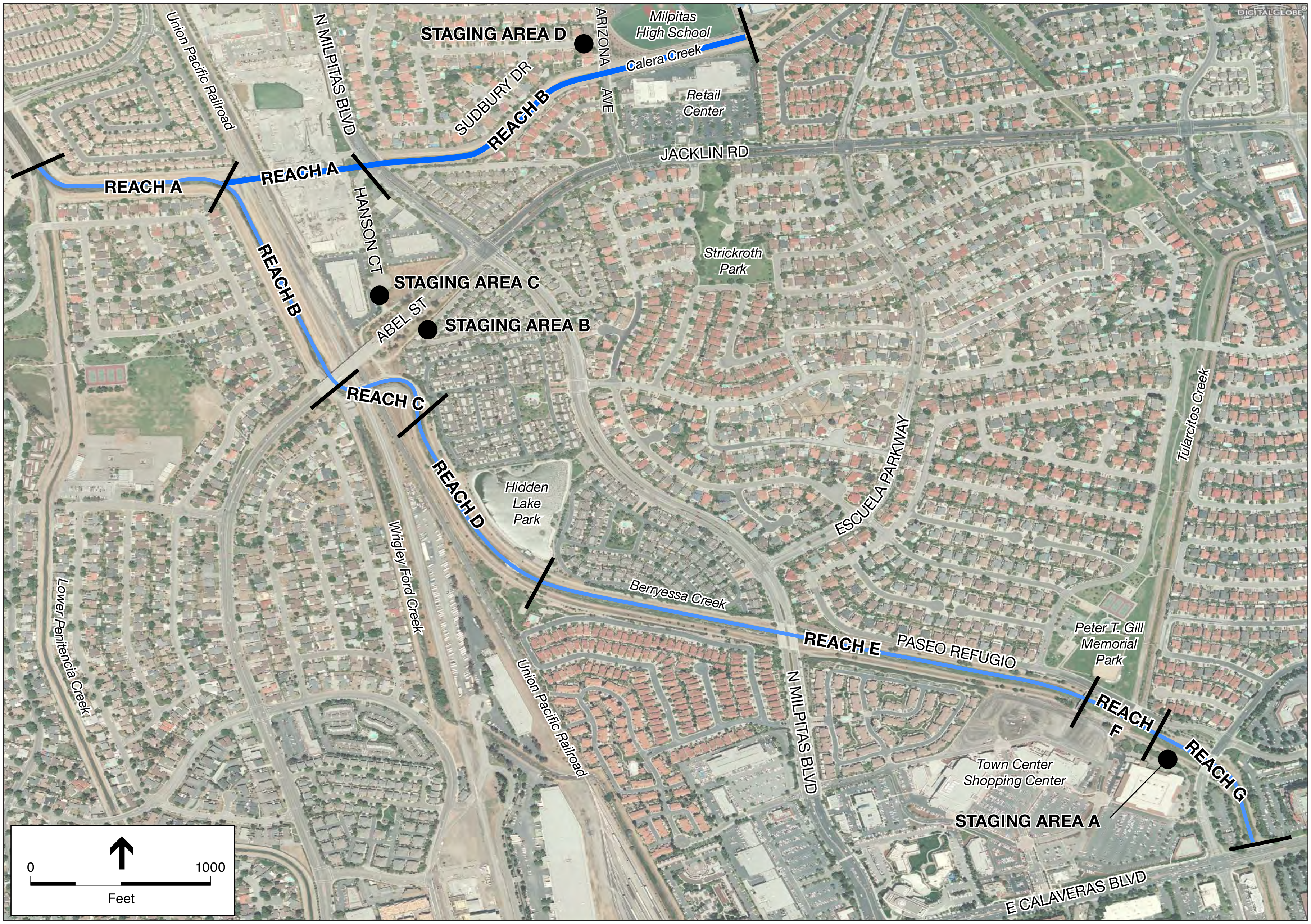
In addition to continuing the maintenance activities currently required by existing facilities and covered by the District's SMP, project improvements would require additional structural maintenance activities for the new floodwalls, levees, and maintenance roads. Anticipated maintenance activities associated with the operation of the facilities include: inspection, sediment removal, bank protection, vegetation management, and minor maintenance, such as trash and debris removal, graffiti abatement, maintenance road grading, rodent control, and installation and repair of fences. These activities would be implemented regularly, per the District's SMP and BMP Handbook, to maintain channels and facilities at design conditions.

Annually performed vegetation management activities would include:

- *Levees*: Vegetation growth along the top of levee maintenance roads would be prevented. Woody vegetation establishment and growth on the levee slopes or top would be preserved where vegetation does not affect the function of the channel and improvements.

- *Floodwalls*: Floodwalls adjacent to the ROW would be kept clear of weeds, and woody vegetation would be removed from within five feet of floodwalls, except in areas where vegetation is included as part of the Project.

- *Natural and Low flow Channels*: Natural and low flow channels would be monitored for hazardous tree conditions, channel blockages, and other conditions that would impede flow



SOURCE: District, 2010; GlobeXplorer; ESA

Lower Berryessa Creek Project . 201425

Figure 6
Project Staging Areas

or create local drainage problems. Vegetation on the newly-created low earthen bench, located adjacent to the low flow channel, would be preserved where it does not affect the function of the channel and improvements. If channel function and capacity is impaired by vegetation near the low flow channel, removal of such vegetation will be in accordance with proposed SMP and BMP standards[5].

Structural maintenance activities would include:

- *Levees*: Levee tops and slopes would be monitored for erosion damage and repaired as needed. Every five years, the top of levee elevations would be monitored and restored to design elevations if the measured elevations differed from design elevations by more than one foot.

- *Floodwalls*: Floodwalls would be visually inspected on a monthly basis and graffiti removed if necessary. Every five years, floodwall elevations would be monitored through surveying identified control points. In the case that the measured elevations vary from the as-built elevations by more than six inches, the floodwalls would be analyzed by a competent structural engineer for foundation problems. Top of wall elevations would be restored to design elevations if measured elevations differ from design elevations by more than one foot.

- *Maintenance Access Roads*: Aggregate base and soil cement maintenance roads would be monitored for cracking and potholes and repaired as needed. Aggregate base and soil cement maintenance roads would be monitored for erosion and potholes and repaired as needed, and measures would be taken to prevent vegetation growth. Specifically, field staff would drive maintenance roads regularly to inspect facilities; and remove any trash, debris, or graffiti, if present. Flood patrol teams would drive maintenance roads during storm events and District staff would use these roads when accessing creeks for maintenance activities.

- *Concrete Channels*: Exposed and accessible channel walls would be visually inspected on a monthly basis and graffiti removed if necessary. Inlet and outlet structures would be monitored and maintenance activity would be triggered if any erosion damage, structural damage, or sediment depths greater than one foot above design conditions were observed.

Consistent with current practice and as stipulated in the District's SMP and BMP Handbook, the need for sediment maintenance activity or sediment removal would be triggered by the accumulation of more than one foot of average sediment depth in creek channels, culverts, and hydraulic structures. Sediment removal could require a variety of heavy equipment, as well as temporary cofferdams and diversion structures when flows must be bypassed around the maintenance site. These activities generally would occur between July 1 and October 15 with an average duration of 10 days. Excavated sediment would be disposed at a landfill or other suitable site and reused when feasible.

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[5] Proposed SMP BMPs address the application of instream herbicides; specifically, only NMFS-approved aquatic formulations of herbicides and surfactants would be utilized; spray or dust application will take into account wind strength and direction to prevent unintended dispersal; herbicide application would be restricted to between June 15 and October 31 (with a possible extension through December 31, dependent upon rainfall and local steelhead upmigration an spawning observations); and no herbicides will be applied in areas identified as potential habitat for special status species or communities until a qualified biologist has surveyed the area and determined absence or outlined appropriate avoidance/minimization measures or alternative strategies to vegetation removal.

In addition to routine vegetation and structural maintenance activities, and regular sediment removal, the proposed infrastructure improvements would eventually require structural rehabilitation and/or replacement. The details of these activities are not known, and they may require future CEQA review when the details become available.

Most of the maintenance activities described above are currently ongoing, and impacts of these maintenance activities are generally addressed in the 2000 SMP EIR[6]. It is anticipated that sediment flow through creeks in the project area would not change with project implementation. As such, the District would continue the existing sediment removal schedule of one half of the channel annually for Lower Berryessa Creek and periodically for Lower Calera Creek. Mowing of levee banks for fire safety purposes would continue; however the adjacent low earthen benches, created to allow the establishment of wetland vegetation, would be protected and would not be subject to regular vegetation management. Further, the project would construct levees and maintenance roads with improved and more durable materials which would likely result in a decrease in the required routine maintenance to these structures.

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[6] The District is currently in the process of renewing the RWQCB permit for the SMP for the years 2012 through 2017.

CHAPTER 3

Action Area and Study Methodology

3.1 Description of the Action Area

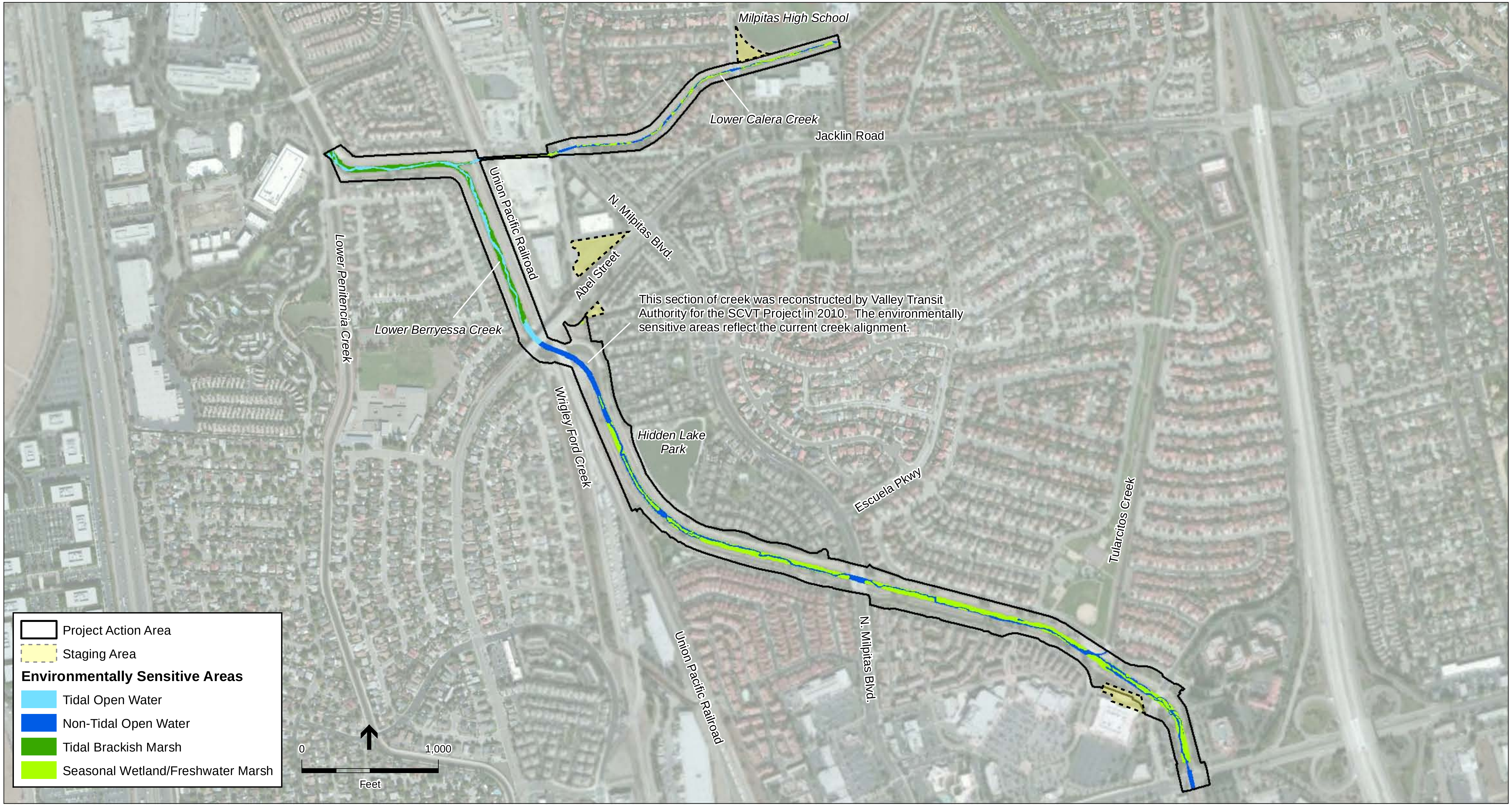
Potential effects on listed species were analyzed for the action area. All creek reaches within the Project area are defined as the action area for this BA. This includes 75 feet of Tularcitos Creek, 30 feet of Lower Penitencia Creek, 8,820 feet of Lower Berryessa Creek, and 2,833 feet of Lower Calera Creek. Additionally, the adjacent wetlands, and upland areas within the staging and construction foot-print are also included in the action area. **Figure 7** shows the extent of the action area.

3.2 Literature Search and Survey Dates

The CNDDB (2010), CNPS (2010), and USFWS (2010a) were consulted regarding federally-listed botanical and wildlife resources within the vicinity of the proposed action. These database searches were completed for the Milpitas and Calaveras Reservoir USGS 7.5-minute quadrangles. Several surveys for California red-legged frog and steelhead habitat in the action area have been conducted in support of the proposed action, and include CH2M Hill, 2001; ESA, 2002a and ESA 2002b; and Tetra Tech, 2002a and 2002b. In addition, biological literature pertinent to the proposed action was reviewed (e.g. Jennings and Hayes, 1994; USFWS, 1999). Chapter 5 presents the results of these database searches, as well as the assessment of habitat suitability for the species identified as potentially occurring within the project vicinity. A complete list of references is included in *Chapter 7 References and Report Preparation*.

3.3 Impact Assessment Methodology

Vegetative communities, present and past locations of listed species in the vicinity of the proposed action, and habitat for listed plant and animal species were examined and compared to the project description to determine potential direct and indirect effects. The following is a discussion of the criteria used to determine the extent of project-related effects to listed species. Direct effects to listed species are possible when animals or their habitat are killed or injured by moving vehicles, foot traffic, or construction equipment; if reproduction fails as a result of project activities and noise; or if the species are entombed when fill is placed on them. Indirect effects on listed species could occur if potential habitat exists in the action area which is altered or destroyed as a result of project activities, including construction noise, dust, lighting associated with construction night work, or increased turbidity in water of the Lower Berryessa or Lower Calera Creek channels. These effects are discussed in more detail in *Chapter 6 Summary of Effects and Mitigation Measures*.



SOURCE: Microsoft Virtual Earth, 2010; ESA, 2005; ESA, 2010; SCVWD, 2010

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Figure 7
Project Action Area and
Environmentally Sensitive Habitats

CHAPTER 4
Environmental Setting

4.1 Regional Description

The Lower Berryessa Creek Project consists of the Lower Berryessa Creek and Lower Calera Creek project elements, and is located in the city of Milpitas, within the Coyote Creek Watershed in Santa Clara County. The Coyote Creek Watershed is Santa Clara County's largest watershed, encompassing 236,161 acres (369 square miles) from Morgan Hill to Milpitas, of which approximately 70 percent remains rural and/or relatively undeveloped. The project region has a Mediterranean climate with cool, wet winters and warm, dry summers, and receives an average of less than 15 inches of rainfall a year.

Lower Berryessa Creek and its tributaries are located within the highly developed valley floor in the city of Milpitas. Land uses in the vicinity of both Lower Berryessa Creek and Lower Calera Creek consist entirely of residential, commercial, and industrial developments. Interstate 880, Interstate 680, California State Route 237, and Union Pacific Railroad tracks are all less than one mile away from the action area.

4.2 Vegetation Communities

The Project site supports the following plant communities: freshwater marsh/wetland; brackish marsh/wetland; and ruderal/non-native annual grassland. The plant community classification presented herein is based on the CDFG *List of California Terrestrial Natural Communities Recognized by the California Natural Diversity Database* (CDFG, 2003). This BA also relies on *A Manual of California Vegetation* (Sawyer and Keeler-Wolf, 1995) which maintains a more detailed inventory of terrestrial natural communities based on the dominant plant species present.

4.2.1 Freshwater Marsh/Wetland

Generally, wetlands are lands where water saturation is the dominant factor in determining the nature of soil development and the types of plant communities living in the soil and on its surface. Within the action area, freshwater marsh occurs along the edges of the creek channels and occupies most of the channel in reaches with sediment build-up, resulting in reduced water flows and the establishment of freshwater marsh vegetation. Open water areas tend to occur in deeper waters within the low-flow areas of the creeks. Freshwater marsh is characterized by a dominance of hydrophytic species which can be composed of several different vegetation associations. Because the creeks are managed flood control channels, the location of freshwater marsh and open water habitats can be dynamic and shift from year to year depending on annual rainfall.

Dominant freshwater marsh species, including floating water-primrose (*Ludwigia peploides*) and watercress (*Nasturtium officinale* [=*Rorippa nasturtium-aquaticum*]), are found throughout the Lower Berryessa Creek corridor. Barnyardgrass (*Echinochloa crus-galli*), a non-native annual grass, is also an occasional dominant species. Stands of cattail (*Typha latifolia* and/or *T. angustifolia*) and bulrush (*Schoenoplectus californicus* [=*Scirpus californicus*])are associated species and are found in limited areas within the project area.

Habitat Attributes

Wildlife that depend on freshwater marsh and open water areas include: coyotes, foxes, raccoons, some rabbits, rodents, and many species of birds. A number of amphibians require standing or flowing water for breeding, such as the western toad (*Bufo boreas*), the Sierran tree frog (*Pseudacris sierra*), and the California red-legged frog (*Rana draytonii*), a federally threatened and California Species of Special Concern. Bird species that inhabit freshwater marsh include red-winged blackbird (*Agelaius phoeniceus*), marsh wren (*Cistothorus palustris*), and black phoebe (*Sayornis nigricans*). The western pond turtle (*Actinemys marmorata*), a California Species of Special Concern, is found in freshwater marsh that is adjacent to open water areas. The narrow band of freshwater marsh vegetation along the creek banks provides some nesting and/or foraging opportunities and cover for water bird species such as common merganser (*Mergus merganser*), great blue heron (*Ardea herodias*), American coot (*Fulica americana*), snowy egret (*Egretta thula*), and song sparrow (*Melospiza melodia*), as well as mallard (*Anas platyrhynchos*), great egret (*Casmerodius albus*), and common snipe (*Gallinago gallinago*).

4.2.2 Brackish Marsh/Wetlands

Brackish marsh wetlands are located in Lower Berryessa Creek, downstream from the railroad crossing at Abel Street. The brackish marsh wetlands in the action area are a result of tidal influx and are distinct from the wetlands upstream of Abel Street in that they support both a greater percentage of and a greater cover by perennial species. Brackish marsh vegetation occupies the shallower margins of the channel and, in some locations, the narrow bars in the middle of the channel.

Vegetation is dominated by bulrush (*Schoenoplectus californicus* [=*Scirpus californicus*]) and water smartweed (*Persicaria* sp. [=*Polygonum* sp]); both of which are obligate wetland species. Willow-leaf dock (*Rumex salicifolius*), common water plantain (*Alisma triviale* [=*Alisma plantago-aquatica*]), and floating water primrose (*Ludwigia peploides*) occur as associates.

Habitat Attributes

Species likely to inhabit this community within the project area include bird species such as red-winged blackbird (*Agelaius phoeniceus*), marsh wren (*Cistothorus palustris*), and black phoebe (*Sayornis nigricans*). This vegetation community also provides some nesting and/or foraging habitat opportunities and cover for water bird species such as common merganser (*Mergus merganser*), great blue heron (*Ardea herodias*), American coot (*Fulica americana*), snowy egret (*Egretta thula*), and song sparrow (*Melospiza melodia*), as well as mallard (*Anas platyrhynchos*), great egret (*Casmerodius albus*), and common snipe (*Gallinago gallinago*).

4.2.3 Ruderal/Non-native Annual Grassland

Ruderal communities consist of weedy vegetation that typically occurs in areas where soils and native vegetation have been significantly disturbed by grading, plowing, construction, or other land-clearing activities, resulting in the dominance of non-native species. This community, which could also be classified as non-native annual grassland, occurs above the ordinary high water mark on the side slopes of the creek channels and levees, as well as surrounding the levee maintenance roads. Throughout much of the action area, the vegetation along the levee banks is managed by herbicides or mechanical methods. As such, in some of these areas the levees are mowed or are relatively barren.

Where present, ruderal/non-native grasslands in the project area are primarily dominated by non-native annual grasses and an assortment of non-native forbs. These species include wild oats (*Avena barbata*), ryegrass (formerly Italian ryegrass) (*Festuca perennis* [=*Lolium multiflorum*]), bristly oxtongue (*Helminthotheca echioides* [=*Picris echioides*]), poison hemlock (*Conium maculatum*), yellow star-thistle (*Centaurea solstitialis*), and wild radish (*Raphanus raphanistrum*).

Habitat Attributes

Disturbed ruderal/non-native grasslands generally support relatively low wildlife diversity, but could be used by common and special-status species for foraging habitat and migratory corridors. The adjacent freshwater marsh (described above) enhances the wildlife habitat elements of the grasslands in the project area by providing an adjacent water source. Many common species of birds, reptiles, and mammals use non-native annual grasslands for food, shelter materials, and foraging habitat. Reptiles typically found in grassland habitats include western fence lizard (*Sceloporus occidentalis*), western skink (*Eumeces skiltonianus*), and gopher snake (*Pituophis catenifer*). Common birds that use grasslands for foraging and nesting materials include western meadowlark (*Sturnella neglecta*), red-winged blackbird (*Agelaius phoeniceus*), and song sparrow (*Melospiza melodia*).

CHAPTER 5
Listed Species

Listed species were defined for this BA as federally endangered, threatened, or proposed species. Listed species were included in this analysis if they were known to occur or had potential to occur in the vicinity of the proposed action (i.e., Milpitas and Calaveras Reservoir 7.5-minute United States Geological Survey [USGS] quadrangles) based on information provided by USFWS, California Department of Fish and Game's (CDFG) California Natural Diversity Data Base (CNDDB), California Native Plant Society (CNPS), and biological surveys conducted in the action area. Following this review, two listed plants and 17 listed animal species were identified as potentially occurring in the vicinity of the proposed action (**Table 4**).

For each of the listed plant and animal species identified as having at one time occurred in the vicinity of the proposed action, habitat requirements were assessed and compared to the existing habitats within the action area. Plant communities generally correlate with wildlife habitat types. Wildlife habitats were typically classified and evaluated using the CDFG's *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988). Factors such as on-site habitat quality and known geographic distribution of individual species were considered in evaluating the likelihood of listed species occurrence in the action area.

Based on available information obtained through record search and survey data, combined with an evaluation of habitat suitability for listed species known or expected in the area, this BA identifies only one federally listed animal species (California red-legged frog) as potentially occurring in the action area. No listed species, including California red-legged frog or steelhead, were observed in the project area during surveys. Aside from the California red-legged frog, no other listed animal species were determined to have at least a low potential to occur in the action area. No listed plants are expected to occur on the Project site. No critical habitat for listed species is present within the action area. As a result, this section provides an analysis of one species – the California red legged frog - which has at least a low potential of occurrence within the action area that could be adversely affected or placed at risk by the proposed action. The potential effects of the proposed action on this species are discussed in *Chapter 6, Summary of Effects and Mitigation Measures*.

TABLE 4
LISTED SPECIES CONSIDERED IN THE EVALUATION OF THE ACTION AREA

Common Name ***Scientific name***	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
SPECIES LISTED OR PROPOSED FOR LISTING				
Invertebrates				
Conservancy fairy shrimp *Branchinecta conservatio*	FE/--	Endemic to grasslands of the northern two-thirds of the central valley; found in large, turbid pools.	**Presumed Absent**. Suitable habitat not present in action area.	March-April
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT/--	Serpentine bunchgrass, grassland	**Presumed Absent**. Suitable habitat not present in Action area. Not known from action area.	March-May
Vernal pool tadpole shrimp *Lepidurus packardi*	FE/--	Vernal pools and swales, either grass-bottomed or mud-bottomed, with clear to highly turbid water.	**Presumed Absent**. Suitable habitat not present in action area.	March-April
Fish				
Delta smelt *Hypomesus transpacificus*	FT/CT	Brackish and freshwater of large channels in the Sacramento-San Joaquin Delta region.	**Presumed Absent.** Suitable habitat not present in action area.	Year-round
Steelhead – central California coast DPS *Oncorhynchus mykiss*	FT/--	Spawns and rears in coastal streams between the Russian River and Aptos Creek, as well as drainages tributary to San Francisco Bay, where gravelly substrate and shaded riparian habitat occurs.	**Presumed Absent.** Physical barriers to migration from San Francisco Bay and lack of instream habitats prevent occurrence of this species in action area.	Year-round
Steelhead – Central Valley DPS *Oncorhynchus mykiss*	FT/--	Gravelly substrate and shaded riparian habitat in Central Valley streams tributary to the Sacramento River.	**Presumed Absent.** Action area is outside of known range of this species.	Spawn March - August
Chinook salmon – Central Valley spring run ESU *Oncorhynchus tshawytscha*	FT/ST	Clean, cold water over gravel beds for spawning.	**Presumed Absent.** While occasional migrants may occur in southern San Francisco Bay, Action area is outside of known range of this species.	Spawn July - October
Chinook salmon – Sacramento River winter run ESU *Oncorhynchus tshawytscha*	FE/SE	Clean, cold water over gravel beds for spawning; occurs in only in Sacramento River below Keswick Dam.	**Presumed Absent.** Action area is outside of known range of this species.	Spawn April - August
Amphibians				
California red-legged frog *Rana draytonii*	FT/--	Breed in stock ponds, pools, and slow-moving streams with emergent vegetation for escape cover and egg attachment.	**Low Potential**. Habitat within the action area provides very marginal dispersal habitat, but individuals from higher-quality habitats upstream could inadvertently move into the action area.	Year-round

TABLE 4 (continued)
LISTED SPECIES CONSIDERED IN THE EVALUATION OF THE ACTION AREA

Common Name *Scientific name*	Listing Status USFWS/ CDFG/CNPS	Habitat Requirements	Potential to Occur	Period of Identification / Flowering Period
SPECIES LISTED OR PROPOSED FOR LISTING (cont.)				
Amphibians (cont.)				
California tiger salamander *Ambystoma californiense*	FT/CSC	Wintering sites occur in grasslands occupied by burrowing mammals; breed in ponds and vernal pools.	**Presumed Absent.** Nearest breeding pond located approximately two miles from action area, but extensive development and absence of open grasslands likely prevent presence in action area.	November - May
Reptiles				
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT/CT	Inhabits open to partially open scrub communities, including coyote bush scrub and chamise chaparral on primarily south-facing slopes.	**Presumed Absent.** Significant patches of scrub habitat are not present in the vicinity of the action area, and extensive urban development would prevent dispersal of individuals into the action area.	Spring
Birds				
Western snowy plover *Charadrius alexandrinus nivosus*	FT/--	Sandy beaches, salt pond levees, and shores of large alkali lakes; needs sandy, gravelly or friable soils for nesting.	**Presumed Absent.** No suitable habitat is present.	March - September
California *brown* pelican *Pelecanus occidentalis californicus*	FE/CE	Nests on island, seeks cover on islands, mudflats, beaches, and wharves.	**Presumed Absent.** No suitable habitat is present.	May - February
California *clapper* rail *Rallus longirostris obsoletus*	FE/CE	Nests and forages in emergent wetlands with pickleweed, cordgrass, and bulrush.	**Presumed Absent.** Saline and brackish habitats in the action area are limited and do not support sufficient vegetation.	Year-round
California *least* tern *Sternula antillarum (=Sterna, =albifrons) browni*	FE/CE	Colonial breeder on bare or sparsely vegetated flat substrates including sand beaches, alkali flats, land fills, or paved areas.	**Presumed Absent.** No suitable habitat is present.	April - October
Mammals				
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE/CE	Saline emergent marsh with dense pickleweed.	**Presumed Absent** Saline and brackish habitats in the action area are limited and do not support the prerequisite plant species/vegetation type.	Year-round

TABLE 4 (continued)
LISTED SPECIES CONSIDERED IN THE EVALUATION OF THE ACTION AREA

Common Name *Scientific name*	**Listing Status USFWS/ CDFG/CNPS**	**Habitat Requirements**	**Potential to Occur**	**Period of Identification / Flowering Period**
SPECIES LISTED OR PROPOSED FOR LISTING (cont.)				
San Joaquin kit *fox Vulpes macrotis mutica*	FE/CE	Annual grasslands or grassy open stages with scattered, shrubby vegetation. Needs loose-textured sandy soils for burrowing, as well as suitable prey base.	**Presumed Absent.** Annual grassland habitats within the San Francisco Bay basin are not considered within the species' range. One CNDDB occurrence was recorded near the Sunol Dam (CDFG, 2010), but this occurrence is considered out of the typical range of the San Joaquin kit fox.	Year-round
Plants				
Contra Costa goldfields *Lasthenia conjugens*	FE/--/1B.1	Moist grasslands and vernal pools.	**Presumed Absent.** No suitable habitat in action area.	March - June
California sea blite *Suaeda californica*	FE/--/1B.1	Coastal salt marshes and swamps.	**Presumed Absent.** No suitable habitat in action area.	July - October

LISTING CATEGORIES:

Federal Categories (U.S. Fish and Wildlife Service)

FE = Listed as Endangered by the Federal Government
FT = Listed as Threatened by the Federal Government
State Categories (California Department of Fish and Game)
CE = Listed as Endangered by the State of California
CT = Listed as Threatened by the State of California

California Native Plant Society (CNPS)

List 1A = Plants presumed extinct in California
List 1B = Plants rare, threatened, or endangered plants in California and elsewhere
List 2 = Plants rare, threatened, or endangered in California but common elsewhere.
0.1= Seriously endangered in California
0.2= Fairly endangered in California
0.3= Not very endangered in California

SOURCE: CDFG, 2010; CNPS, 2010; ESA, 2002a; ESA, 2002b; Leidy, 2005; USFWS, 2010a; Zeiner et al., 1990.

5.1 Listed Animal Species

California Red-Legged Frog (*Rana draytonii*)

Status

The California red-legged frog was federally listed as threatened on May 23, 1996 (USFWS, 1996), effective June 24, 1996.

General Ecology and Distribution

Historically, California red-legged frogs were distributed along the coast from southern Mendocino County and inland from Redding, Shasta County southward to northwestern Baja California, Mexico (Jennings and Hayes, 1994). Currently, this species occurs in isolated portions of the Sierra Nevada, northern Coast Ranges, and northern Transverse ranges. It was believed to be extirpated from the southern Transverse and Peninsular ranges until recently when two populations were discovered. It is still locally common in the San Francisco Bay area and along the central coast (USFWS, 2010b).

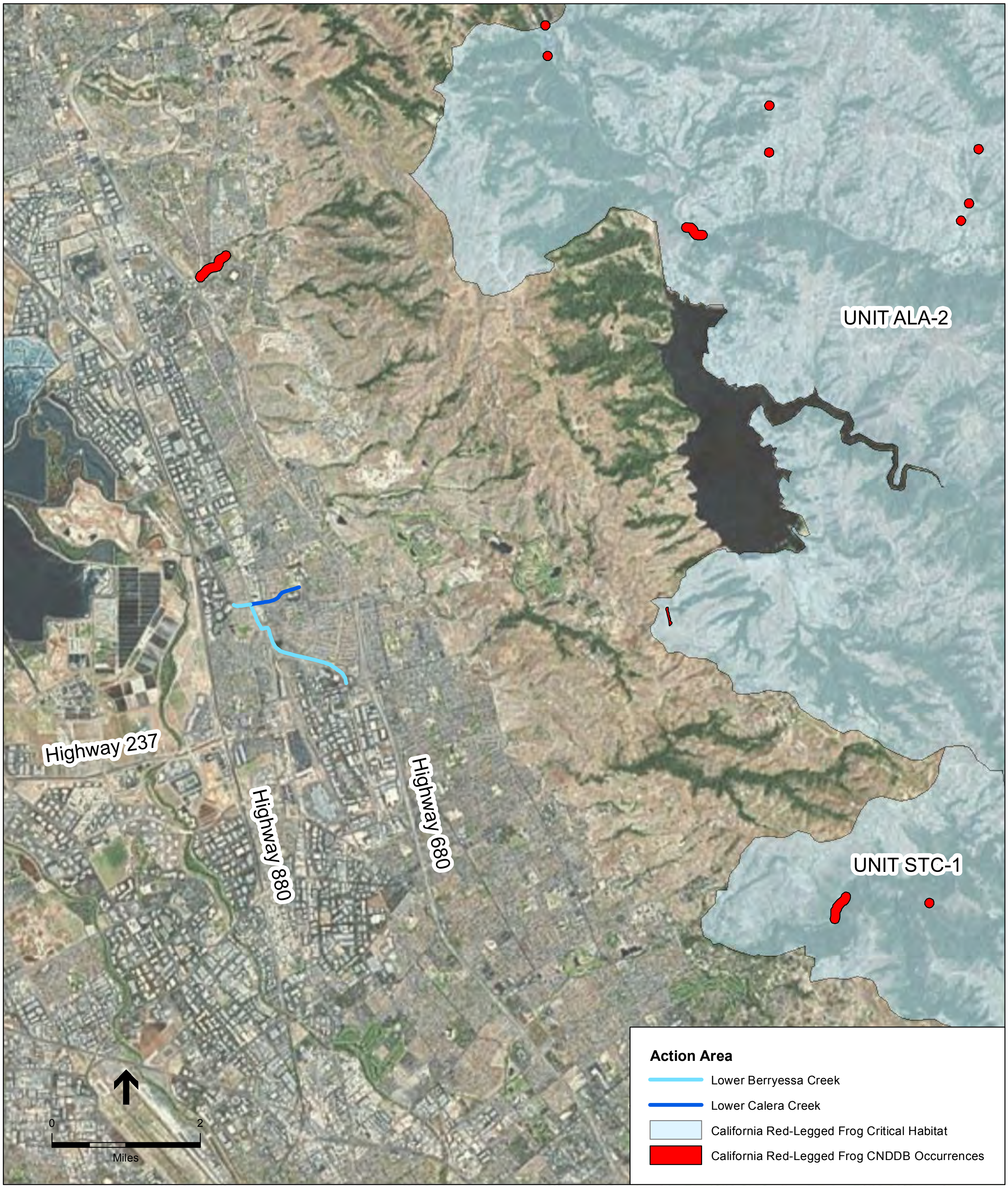
California red-legged frog populations are typically associated with deep pools or lakes with overhanging woody vegetation such as willows, and an intermixed fringe of cattails (*Typha latifolia*) (Jennings, 1988; USFWS, 2002). California red-legged frogs frequently breed in ephemeral creeks and drainages and in ponds that may or may not have riparian vegetation. During summer and fall months this species may disperse upstream and downstream of breeding sites to forage and seek sheltering habitat. Such shelter may include all aquatic, riparian, and upland areas within the range of the species and any landscape features that provide cover, such as small mammal burrows, rocks piles, organic debris (e.g., downed trees or logs), leaf litter, or industrial debris. Incised stream channels with portions narrower than 18 inches and depths greater than 18 inches also may provide important summer sheltering habitat. Accessibility to sheltering habitat is essential for the survival of California red-legged frog populations and can be an important factor that limits their survival. During winter rain events, juvenile and adult California red-legged frogs are known to disperse up to one to two kilometers (0.6 to 1.4 miles) (Rathbun and Scott, 2009).

California red-legged frogs generally breed from November to April, attaching eggs to vegetation, fencing, or any available attachment sites in shallow water (USFWS, 2002). Tadpoles grow to three inches before metamorphosing. California red-legged frogs are adapted to a highly variable climate that can alternate yearly between very wet and extreme drought conditions. In response to this variability, in wet years frog reproduction is high, and more sites become occupied by dispersing young frogs. In drought years populations may decline, and previously occupied sites are no longer inhabited. Such aquatic sites may be infrequently occupied by this species but may still be important to species migration and dispersal during successful breeding years.

Action Area Occurrence

As shown in **Figure 8**, the nearest CNDDB records for California red-legged frog are located approximately four miles away from the action area (CDFG, 2010). One occurrence north of the action area is in Agua Caliente Creek, within an open channel surrounded by urban development. Another occurrence is east of the action area, in hills of the Diablo Range adjacent to Calaveras Reservoir. A third red-legged frog occurrence, approximately 7 miles southeast of the action area, was recorded in the upper reaches of Penitencia Creek in the undeveloped hills of the Diablo Range.

Extensive surveys and habitat assessments were conducted for California red-legged frog for the overall Lower Berryessa Creek Program, but no California red-legged frog tadpoles, metamorphs, or adult frogs were observed. The District has preformed biological pre-construction surveys in



SOURCE: CDFG, 2011; ESRI, 2010; USFWS, 2010

Lower Berryessa Creek Project . 201425

Figure 8
California Red-Legged Frog Critical Habitat
and Nearby CNDDB Occurrences

various segments of Lower Berryessa Creek and Lower Calera Creek within the action area (surveys conducted in 2004 through 2010) in support of the District’s Stream Maintenance Program (SMP). Biological pre-construction surveys are required prior to any work conducted under the permit authority of the SMP and reported to federal and state resource agency staff at year end. As of 2010, no sensitive species have been found during pre-construction surveys, although common species (western toad, black phoebe, Sierran tree frog etc) have been documented. (District, 2004, 2005, 2006, 2007, 2008, 2009 and 2010)

The biological assessment for the District’s SMP determined, partly using past red-legged frog surveys, that only low quality dispersal habitat for red-legged frogs is present in the area. In addition, the assessment concluded that aquatic and upland herbicide application and vegetation removal would not impact red-legged frogs in the project area(District, 2001). Surveys, planning documents, and permits between 1996 and 2002 in the vicinity of the action area were summarized in an ESA memo, which concluded that no habitat for listed species is present in the action area (ESA, 2002a). Regarding presence of the California red-legged frog, ESA wrote a letter to the USFWS with supporting information documenting that Berryessa Creek does not support either habitat or California red-legged frog individuals; Cecilia Brown, USFWS, concurred with this determination (pers. comm. Cecilia Brown, 2002). In general, habitats in Lower Berryessa Creek lack woody vegetation and slow flowing pools for red-legged frogs; only one pool of sufficient depth for red-legged frogs was found in a 2002 survey (Tetra Tech, 2002a).

Above a drop structure upstream of the action area, Upper Calera Creek contains more emergent wetland vegetation than other habitats within the action area, and could potentially support dispersing California red-legged frogs. No observations of red-legged frogs have been recorded in this area, but there is potential for individual frogs to disperse or take refuge in these non-breeding habitats present above the action area. Upper Calera Creek is directly connected to Lower Calera Creek, which is within the action area. Although habitat within Lower Calera Creek is not suitable for California red-legged frogs, there is a low potential for frogs to disperse or inadvertently be washed down into the action area from more suitable habitats in Upper Calera Creek.

5.2 Critical Habitat

On March 17, 2010, USFWS designated critical habitat for the California red-legged frog, which included more than one million additional acres of critical habitat than the previous designation in 2006. The action area is not within any California red-legged frog critical habitat units. Unit ALA-2 is the nearest critical habitat unit, more than four miles east of the action area, as depicted in Figure 8.

CHAPTER 6

Summary of Effects and Minimization Measures

In *Chapter 5.0 Listed Species*, federal and candidate species occurring in the vicinity of the action area were discussed, and the California red-legged frog was the only listed species identified with at least a low potential to occur in the action area. This section describes the potential effects the proposed action could have on these species, as well as measures proposed to avoid and minimize such effects.

6.1 Definitions of Effects

The proposed action may result in direct, indirect, and/or cumulative effects on listed species.

> *Direct effects* are defined as the direct or immediate effects of a proposed action on a species or its habitat. The effects occur at the same time as, or very close in time to, the action itself (e.g., loss of habitat, construction noise disturbance, or sedimentation that results from construction activity). Direct effects result from the action, and may include the effects of interrelated and interdependent actions. An *interrelated action* is an activity that is part of the proposed action and depends on the proposed action for its justification. An *interdependent action* is an activity that has no independent utility apart from the action under consultation (USFWS and NMFS, 1998).
>
> *Indirect effects* are caused by or result from a proposed action, are later in time, and are reasonably certain to occur. Examples of indirect effects are habitat changes induced by higher operating elevations; increased predation through exposure; and a declining prey base because of impaired habitat suitability. Indirect effects may occur outside the area directly affected by the action (USFWS and NMFS, 1998).
>
> *Cumulative effects* comprise the effects of future state, local, and private actions not involving a federal action that are reasonably certain to occur within the action area under consideration (USFWS and NMFS, 1998).

6.2 Potential Effects of the Proposed Action

If California red-legged frogs are found in the action area, several potential direct impacts, such as injury or death, may occur. Direct effects on red-legged frog adults, sub-adults or tadpoles that could occur in the action area include:

- Crushing of red-legged frogs by earth moving equipment, construction debris or worker foot traffic during in-channel construction activities.

- Injury or death of red-legged frogs as a result of dewatering creek channels containing active flow.
- Entrapment of red-legged frogs in open trenches for floodwall or bridge abutment construction, or any other open holes in the action area.

Indirect effects on California red-legged frogs could include:

- Harassment of red-legged frogs potentially present in the action area from construction noise or vibration.
- Increased predation by carnivores attracted to the action area by trash left during or after project activities.
- Discharge of sediment or hazardous materials into creek channels where red-legged frogs could potentially be present.

Typically, indirect effects include degradation of any California red-legged frog habitat due to earth moving, filling, or discharge of sediment or hazardous materials as part of the proposed action. No part of the action area is considered breeding or dispersal habitat for red-legged frogs, and previous surveys did not detect red-legged frogs in upper Calera Creek. However, direct and indirect effects could occur on red-legged frogs that could get flushed downstream or move into the action area from higher-quality potential habitats in upper Calera Creek.

6.3 Reasonable and Prudent Measures to Minimize the Potential for Incidental Take of Listed Species

While habitat is generally unsuitable for California red-legged frogs and no occurrences have been recorded during seven years of pre-construction surveys for the SMP, individuals could move from upstream habitats into the action area. In order to avoid a “take” of these species and limit any adverse effects, reasonable and prudent measures shall be implemented during construction activities. Relevant best management practices (BMPs) from the 2008 District BMP Handbook (District, 2008) are indentified below as reasonable and prudent measures to be implemented during the proposed action. A list and description of the District BMPs enumerated below are included in Appendix C. Additional reasonable and prudent measures are also listed to prevent take of California red-legged frogs.

Santa Clara Valley Water District BMPs

- Pre-construction surveys for California red-legged frog will be conducted in the action area according to measure BI-2.
- Hazardous materials from fueling, vehicle and equipment washing, vehicle and equipment maintenance, and spills will be contained by implementing measures HM-9 through HM-14. According to these measures, fueling or equipment maintenance in the Lower Berryessa and Lower Calera Creek channels will be avoided if possible. Full containment will be used for fueling and maintenance of immobile equipment within creek channels.

Onsite personnel will be required to know the location of the spill kit and how to effectively use it.

- Disturbance of sediments and potential effects from pumps will be minimized by implementing measures WQ-4 and WQ-12, which require use of screens on pumps to prevent injury or death to California red-legged frogs, and describe diversion designs to maintain creek flow while preventing sediment from being discharged downstream. Implementation of measure WQ-15 will prevent discharge of sediment-laden groundwater from work areas into Lower Berryessa and Lower Calera creeks.

- Discharge of sediments into Lower Berryessa or Lower Calera Creek from trucks and stockpiles will be prevented by implementing measures WQ-4 and WQ-5.

- Hydroseeding and removal of construction and demolition debris after project work is completed will be implemented through measures WQ-14 and WQ-18.

- After flows from creek diversions are restored, erosion or scour of downstream sections within the action area will be minimized by implementing measures WQ-16 and WQ-17.

- Discharge of sediments into Lower Berryessa or Lower Calera Creek through culverts and storm drains adjacent to the creek channels will be minimized by installing silt fence and other sediment controls as described in measures WQ-26 and WQ-29.

- Turbidity levels will be monitored through implementation of measure WQ-40, to ensure the proposed action will not degrade fish and wildlife habitat in the action area.

- Additional BMPs will be used when required, according to the latest edition of the California Stormwater Quality Associations' *Stormwater Best Management Practices Handbook*, as described in measure WQ-41.

Measures Proposed in this BA to Minimize Effects on

California Red-Legged Frog

- Prior to construction, a qualified biologist will provide environmental awareness training for all workers who will be on site. At a minimum, the training will include a description of California red-legged frog and their habitat, a discussion of the importance of the species, general measures that are being implemented to conserve the species and its habitat as they relate to the proposed action, and the limits of construction disturbance.

- If any California red-legged frogs are detected in the work area during pre-construction surveys, work will be halted in that immediate area and any frogs present will be allowed to leave the area of their own accord. Red-legged frogs will not be handled or harassed in any way.

- During work activities, all trash that may attract predators will be properly contained, removed from the work site, and disposed of regularly. Following construction, all trash will be removed from the work areas.

- Work activities in aquatic habitats within the creeks shall be completed between April 1 and November 1, thereby avoiding the breeding season.

6.4 Cumulative Effects

The potential for Project-generated effects to contribute to cumulative effects on California red-legged frog arises if any additional project not involving a federal action were to be constructed within the action area in the foreseeable future. While several projects are proposed within the action area (e.g. the District's Stream Maintenance Program and Pipeline Management Program, the South Bay Advanced Water Recycling Treatment Facility), all include a federal action resulting in consultation with the USFWS. Any projects in upland areas outside of the Lower Berryessa or Lower Calera Creek channels would not have cumulative effects on red-legged frog due to the lack of suitable California red-legged frog habitat in upland areas under the current conditions. Cumulative effects due to increased human presence as a result of the proposed action are not expected, as no recreational improvements to make the action area more accessible to humans than is currently possible are proposed. Therefore, no cumulative effects on California red-legged frog are anticipated as a result of any other projects proposed for the action area in the reasonably foreseeable future.

CHAPTER 7

Determination

This BA concludes that the proposed Project is not likely to adversely affect the California red-legged frog, and we hereby request USFWS concurrence with this conclusion. The conclusion is based on a number of factors, including:

(1) Poor Quality Habitat in Action Area. The entirety of the action area is within a man-made, earthen trapezoidal channel that lacks quality habitat for California red-legged frog, and surrounding areas are dominated by residential, commercial, and industrial development.

(2) No California Red-legged Frog Observations in Action Area. Repeated survey efforts in and around the action area have not observed any California red-legged frog tadpoles, metamorphs, or adult frogs, and habitat assessments previously conducted in the action area have determined only low-quality dispersal habitat for red-legged frogs is present.

(3) Well Established BMP Implementation by District. District BMPs and reasonable and prudent measures will ensure that individual frogs potentially occurring in the vicinity of the action area (as a result of potentially being washed downstream from their habitat in upper stream reaches) will not be affected by in-channel construction, reduced water quality due to discharges of sediment, or reduced water quality due to discharges of hazardous materials as a result of the proposed action.

(4) Finite Construction Window During Dry Season. Work activities in aquatic habitats within the creeks shall be completed between April 1 and November 1.

In addition, no critical habitat has been designated within the action area for any listed species; therefore none will be destroyed or adversely modified during proposed project activities.

CHAPTER 8
References and Report Preparation

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8.2 Report Preparation

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Senior Biologist Review:	Julia King
Biological Assessment Author:	Bryan Olney

APPENDIX A

Agency Letters and Database Searches

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

November 16, 2010

Document Number: 101116022158

Bryan Olney
Environmental Science Associates
350 Frank Ogawa Plaza Ste. 300
Oakland, CA 94612

Subject: Species List for Lower Berryessa Creek Biological Assessment

Dear: Mr. Olney

We are sending this official species list in response to your November 16, 2010 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be February 14, 2011.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

TAKE PRIDE® IN AMERICA

U.S. Fish & Wildlife Service

Sacramento Fish & Wildlife Office

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 101116022158

Database Last Updated: April 29, 2010

Quad Lists

Listed Species

Invertebrates

Branchinecta conservatio
- Conservancy fairy shrimp (E)

Euphydryas editha bayensis
- bay checkerspot butterfly (T)

Lepidurus packardi
- Critical habitat, vernal pool tadpole shrimp (X)
- vernal pool tadpole shrimp (E)

Fish

Hypomesus transpacificus
- delta smelt (T)

Oncorhynchus mykiss
- Central California Coastal steelhead (T) (NMFS)
- Central Valley steelhead (T) (NMFS)
- Critical habitat, Central California coastal steelhead (X) (NMFS)

Oncorhynchus tshawytscha
- Central Valley spring-run chinook salmon (T) (NMFS)
- winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Ambystoma californiense
- California tiger salamander, central population (T)
- Critical habitat, CA tiger salamander, central population (X)

Rana draytonii
- California red-legged frog (T)
- Critical habitat, California red-legged frog (X)

Reptiles

Masticophis lateralis euryxanthus
- Alameda whipsnake [=striped racer] (T)
- Critical habitat, Alameda whipsnake (X)

Birds

Charadrius alexandrinus nivosus
- western snowy plover (T)

Pelecanus occidentalis californicus
- California brown pelican (E)

Rallus longirostris obsoletus
- California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
- California least tern (E)

Mammals

Reithrodontomys raviventris
- salt marsh harvest mouse (E)

Vulpes macrotis mutica
- San Joaquin kit fox (E)

Plants

Lasthenia conjugens
- Contra Costa goldfields (E)
- Critical habitat, Contra Costa goldfields (X)

Suaeda californica
- California sea blite (E)

Proposed Species

Amphibians

Rana draytonii
- Critical habitat, California red-legged frog (PX)

Quads Containing Listed, Proposed or Candidate Species:

CALAVERAS RESERVOIR (427A)
MILPITAS (427B)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.
(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.
(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.
(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.
Critical Habitat - Area essential to the conservation of a species.
(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.
(C) *Candidate* - Candidate to become a proposed species.
(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.
(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our Protocol and Recovery Permits pages.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our Map Room page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be February 14, 2011.

QUADS: Milpitas, Calaveras Reservoir
Natural Diversity Database
Selected Elements by Scientific Name - Landscape

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
1	Agelaius tricolor	tricolored blackbird	ABPBXB0020			G2G3	S2		SC
2	Ambystoma californiense	California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3		SC
3	Aquila chrysaetos	golden eagle	ABNKC22010			G5	S3		
4	Ardea herodias	great blue heron	ABNGA04010			G5	S4		
5	Astragalus tener var. tener	alkali milk-vetch	PDFAB0F8R1			G1T1	S1.1	1B.2	
6	Athene cunicularia	burrowing owl	ABNSB10010			G4	S2		SC
7	Atriplex depressa	brittlescale	PDCHE042L0			G2Q	S2.2	1B.2	
8	Atriplex joaquiniana	San Joaquin spearscale	PDCHE041F3			G2	S2	1B.2	
9	Campanula exigua	chaparral harebell	PDCAM020A0			G2	S2.2	1B.2	
10	Centromadia parryi ssp. congdonii	Congdon's tarplant	PDAST4R0P1			G4T3	S3.2	1B.2	
11	Charadrius alexandrinus nivosus	western snowy plover	ABNNB03031	Threatened		G4T3	S2		SC
12	Chorizanthe robusta var. robusta	robust spineflower	PDPGN040Q2	Endangered		G2T1	S1.1	1B.1	
13	Clarkia concinna ssp. automixa	Santa Clara red ribbons	PDONA050A1			G5?T3	S3.3	4.3	
14	Cordylanthus maritimus ssp. palustris	Point Reyes bird's-beak	PDSCR0J0C3			G4?T2	S2.2	1B.2	
15	Corynorhinus townsendii	Townsend's big-eared bat	AMACC08010			G4	S2S3		SC
16	Dipodomys heermanni berkeleyensis	Berkeley kangaroo rat	AMAFD03061			G3G4T1	S1		
17	Elanus leucurus	white-tailed kite	ABNKC06010			G5	S3		
18	Emys marmorata	western pond turtle	ARAAD02030			G3G4	S3		SC
19	Eryngium aristulatum var. hooveri	Hoover's button-celery	PDAPI0Z043			G5T2	S2.1	1B.1	
20	Fritillaria liliacea	fragrant fritillary	PMLIL0V0C0			G2	S2.2	1B.2	
21	Geothlypis trichas sinuosa	saltmarsh common yellowthroat	ABPBX1201A			G5T2	S2		SC
22	Lasthenia conjugens	Contra Costa goldfields	PDAST5L040	Endangered		G1	S1.1	1B.1	
23	Lepidurus packardi	vernal pool tadpole shrimp	ICBRA10010	Endangered		G3	S2S3		
24	Malacothamnus arcuatus	arcuate bush-mallow	PDMAL0Q0E0			G2Q	S2.2	1B.2	
25	Malacothamnus hallii	Hall's bush-mallow	PDMAL0Q0F0			G1Q	S1.2	1B.2	
26	Masticophis lateralis euryxanthus	Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2		
27	Melospiza melodia pusillula	Alameda song sparrow	ABPBXA301S			G5T2?	S2?		SC
28	Monardella villosa ssp. globosa	robust monardella	PDLAM180P7			G5T2	S2.2	1B.2	
29	Myotis yumanensis	Yuma myotis	AMACC01020			G5	S4?		
30	Navarretia prostrata	prostrate vernal pool navarretia	PDPLM0C0Q0			G2?	S2.1?	1B.1	
31	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2		
32	Oncorhynchus mykiss irideus	steelhead - central California coast DPS	AFCHA0209G	Threatened		G5T2Q	S2		
33	Rallus longirostris obsoletus	California clapper rail	ABNME05016	Endangered	Endangered	G5T1	S1		
34	Rana boylii	foothill yellow-legged frog	AAABH01050			G3	S2S3		SC

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
35	Rana draytonii	California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3		SC
36	Reithrodontomys raviventris	salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2		
37	Sidalcea malachroides	maple-leaved checkerbloom	PDMAL110E0			G3G4	S3S4.2	4.2	
38	Sorex vagrans halicoetes	salt-marsh wandering shrew	AMABA01071			G5T1	S1		SC
39	Streptanthus albidus ssp. peramoenus	most beautiful jewel-flower	PDBRA2G012			G2T2	S2.2	1B.2	
40	Suaeda californica	California seablite	PDCHE0P020	Endangered		G1	S1.1	1B.1	
41	Tryonia imitator	mimic tryonia (=California brackishwater snail)	IMGASJ7040			G2G3	S2S3		

CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 16 items - Tue, Nov. 16, 2010 16:33 c

Reformat list as: Standard List - with Plant Press controls

ECOLOGICAL REPORT

scientific	family	life form	blooming	communities	elevation	CNPS
Astragalus tener var. tener	Fabaceae	annual herb	Mar-Jun	•Playas (Plyas) •Valley and foothill grassland (VFGrs) (adobe clay) •Vernal pools (VnPls)/alkaline	1 - 60 meters	List 1B.2
Atriplex depressa	Chenopodiaceae	annual herb	Apr-Oct	•Chenopod scrub (ChScr) •Meadows and seeps (Medws) •Playas (Plyas) •Valley and foothill grassland (VFGrs) •Vernal pools (VnPls)/alkaline, clay	1 - 320 meters	List 1B.2
Atriplex joaquiniana	Chenopodiaceae	annual herb	Apr-Oct	•Chenopod scrub (ChScr) •Meadows and seeps (Medws) •Playas (Plyas) •Valley and foothill grassland (VFGrs)/alkaline	1 - 835 meters	List 1B.2
Campanula exigua	Campanulaceae	annual herb	May-Jun	•Chaparral (Chprl) (rocky, usually serpentinite)	275 - 1250 meters	List 1B.2
Centromadia parryi ssp. congdonii	Asteraceae	annual herb	May-Oct(Nov), Months in parentheses are uncommon.	•Valley and foothill grassland (VFGrs) (alkaline)	1 - 230 meters	List 1B.2
Cordylanthus maritimus ssp. palustris	Scrophulariaceae	annual herb hemiparasitic	Jun-Oct	•Marshes and swamps (MshSw) (coastal salt)	0 - 10 meters	List 1B.2
Eryngium aristulatum var. hooveri	Apiaceae	annual/perennial herb	Jul	•Vernal pools (VnPls)	3 - 45 meters	List 1B.1
Fritillaria liliacea	Liliaceae	perennial bulbiferous herb	Feb-Apr	•Cismontane woodland (CmWld) •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/often serpentinite	3 - 410 meters	List 1B.2
Lasthenia conjugens	Asteraceae	annual herb	Mar-Jun	•Cismontane woodland (CmWld) •Playas (Plyas) (alkaline) •Valley and foothill grassland (VFGrs)	0 - 470 meters	List 1B.1

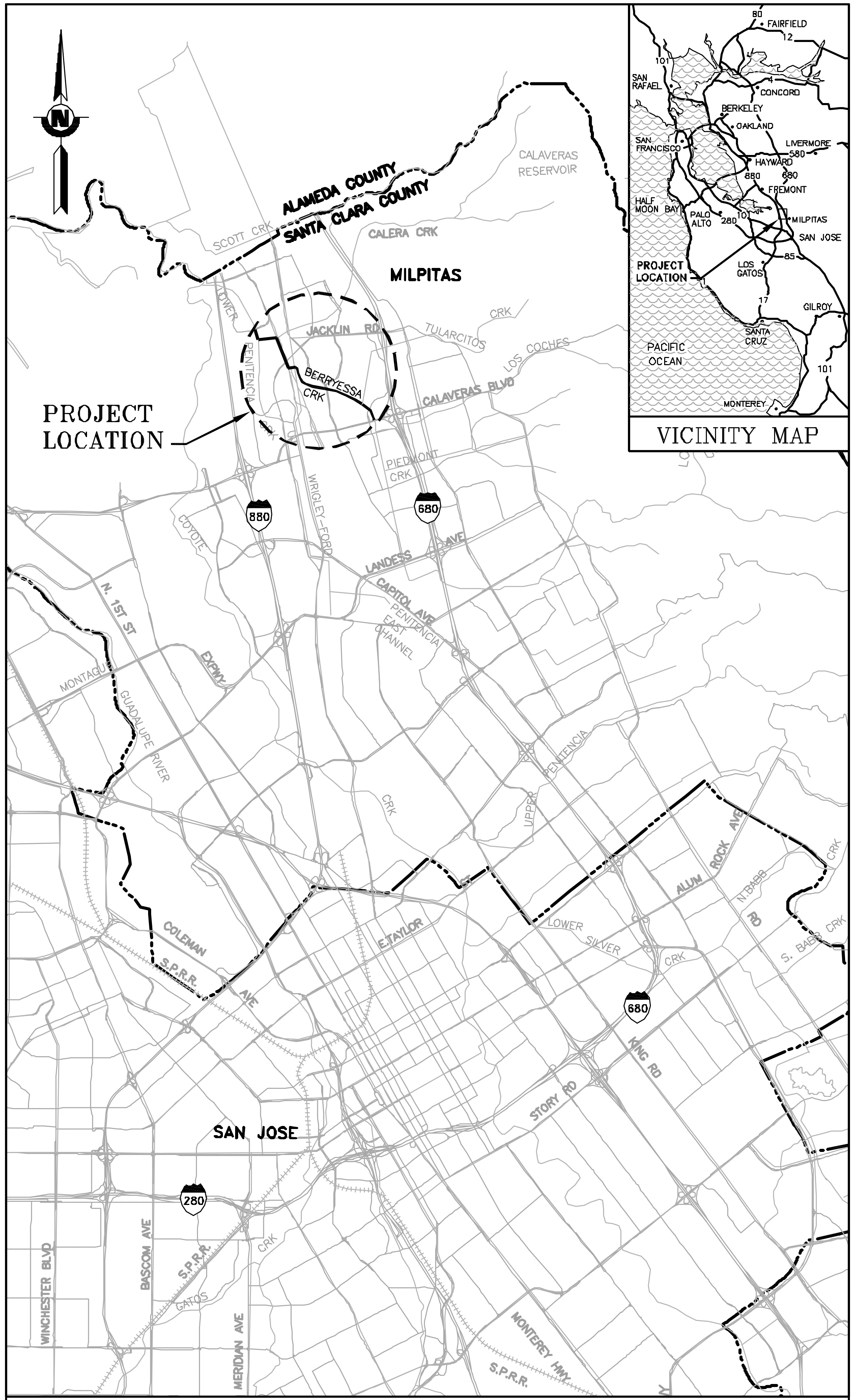
				•Vernal pools (VnPls)/mesic		
Lessingia hololeuca	Asteraceae	annual herb	Jun-Oct	•Broadleafed upland forest (BUFrs) •Coastal scrub (CoScr) •Lower montane coniferous forest (LCFrs) •Valley and foothill grassland (VFGrs)/clay, serpentinite	15 - 305 meters	List 3
Malacothamnus arcuatus	Malvaceae	perennial evergreen shrub	Apr-Sep	•Chaparral (Chprl) •Cismontane woodland (CmWld)	15 - 355 meters	List 1B.2
Malacothamnus hallii	Malvaceae	perennial evergreen shrub	May-Sep(Oct), Months in parentheses are uncommon.	•Chaparral (Chprl) •Coastal scrub (CoScr)	10 - 760 meters	List 1B.2
Monardella villosa ssp. globosa	Lamiaceae	perennial rhizomatous herb	Jun-Jul(Aug), Months in parentheses are uncommon.	•Broadleafed upland forest (BUFrs) (openings) •Chaparral (Chprl) (openings) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)	100 - 915 meters	List 1B.2
Navarretia prostrata	Polemoniaceae	annual herb	Apr-Jul	•Coastal scrub (CoScr) •Meadows and seeps (Medws) •Valley and foothill grassland (VFGrs) (alkaline) •Vernal pools (VnPls)/mesic	15 - 700 meters	List 1B.1
Streptanthus albidus ssp. peramoenus	Brassicaceae	annual herb	(Mar),Apr-Sep(Oct), Months in parentheses are uncommon.	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Valley and foothill grassland (VFGrs)/serpentinite	94 - 1000 meters	List 1B.2
Suaeda californica	Chenopodiaceae	perennial evergreen shrub	Jul-Oct	•Marshes and swamps (MshSw) (coastal salt)	0 - 15 meters	List 1B.1

APPENDIX B

Project Plans

USERNAME: jennford Tue 05 Jul 2011 04:30pm
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\G-D1

DOCUMENT NUMBER: BER_CY-G-4017-0000000.00



LOCATION MAP
SCALE: 1"=4,000'

MAP AND CONSTRUCTION PLAN

FOR

LOWER BERRYESSA CREEK PROJECT

Santa Clara Valley Water District℠

APPROVED BY:

DENNIS CHEONG, P.E. DATE
SENIOR PROJECT MANAGER
COYOTE AND PAJARO WATERSHEDS PROJECTS UNIT

DENNIS WING YAW CHEONG
No. 48911
9/30/12

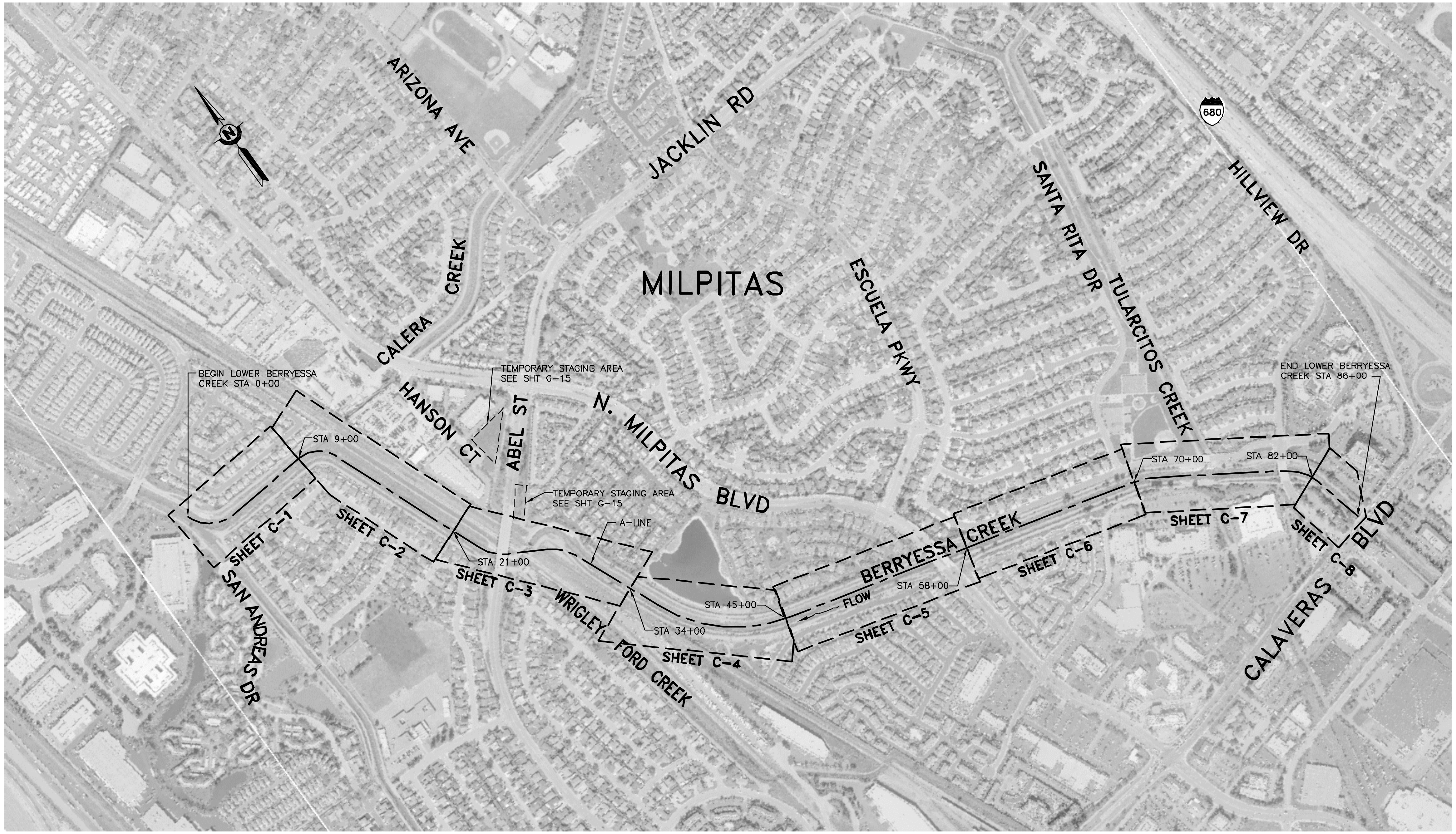
MELANIE RICHARDSON DATE
DEPUTY OPERATING OFFICER
WATERSHEDS CAPITAL DIVISION

ACCEPTED BY:

LIANG LEE, P.E. DATE
DEPUTY OPERATING OFFICER
COYOTE & PAJARO WATERSHED DIVISION

60% PRELIMINARY
06-24-11

CONTRACT NUMBER
PROJECT NUMBER 40174004
SHEET CODE: G-1
SHEET NUMBER: 1 OF 76



INDEX MAP

SCALE: 1"=400'

GENERAL NOTES

1. ALL EXISTING FACILITIES, STRUCTURES, TREES, FENCES, LANDSCAPING, ETC., DESIGNATED "EXIST". OR SHOWN EXISTING (DASHED LINES) ARE TO REMAIN. ONLY THOSE SPECIFICALLY DESIGNATED FOR REMOVAL AS SHOWN ON THE DRAWINGS, OR AS DIRECTED BY THE ENGINEER SHALL BE REMOVED.
2. ALL REFERENCES MADE TO RIGHT OR LEFT AND ALL CROSS-SECTIONS SHOWN ON THE PLANS ARE VIEWED LOOKING UPSTREAM.
3. LOCATIONS AND DEPTHS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THE PLANS ARE BASED ON INFORMATION FROM THE UTILITY COMPANY AND ARE TO BE CONSIDERED AS APPROXIMATE ONLY.
4. PRIOR TO PERFORMING ANY WORK IN THE VICINITY OF EXISTING UNDERGROUND UTILITIES, THE CONTRACTOR SHALL VERIFY THEIR LOCATION AND DEPTH AND TAKE PROPER PRECAUTIONS TO AVOID ANY DAMAGE TO THEM. CALL U.S.A. (UNDERGROUND SERVICE ALERT) 48 HOURS PRIOR TO COMMENCING WORK AT (800) 227-2600 FOR LOCATION.
5. THE CONTRACTOR SHALL INSTALL TEMPORARY FENCES AND OTHER WARNING SIGNS OR DEVICES AS REQUIRED.
6. THE CONTRACTOR SHALL COMPLY WITH THE REQUIREMENTS OF THE STATE WATER RESOURCES CONTROL BOARD FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES.
7. THE CONTRACTOR SHALL NOTIFY UPRR REPRESENTATIVES AT LEAST 5 WORKING DAYS IN ADVANCE, PRIOR TO COMMENCING WITH ANY WORK WITHIN 25 FEET OF ANY UPRR TRACK. ANY FLAG PERSONS OR OTHER SPECIAL PROTECTION AND SAFETY MEASURES PERFORMED BY UPRR SHALL BE AT THE CONTRACTOR'S EXPENSE. UPRR ESTIMATES COST FOR FLAGGING TO BE APPROXIMATELY $750 TO $1000 PER DAY.
8. THE CONTRACTOR'S OPERATIONS SHALL NOT INFRINGE ON THE FOLLOWING MINIMUM CLEARANCES FROM ANY RAILROAD TRACK: 12'-0" HORIZONTALLY FROM THE NEAREST CENTER LINE OF TRACK AND 23'-0" VERTICALLY ABOVE TOP OF RAIL.
9. ALL PEOPLE WORKING ON THE PROJECT WITHIN UPRR RIGHT-OF-WAY REQUIRE CALTRANS RAIL ROAD SAFETY TRAINING AND SAFETY STICKERS ATTACHED TO THEIR CONSTRUCTION HARD HAT.

DESIGN NOTES

1. DISCHARGE CRITERIA:
   - A. Q_{100} = 5,100 CFS AT CALAVERAS BLVD CONFLUENCE.
2. MANNINGS ROUGHNESS COEFFICIENT (N) IS:
   - A. NATURAL CHANNEL = 0.015 - 0.05
3. UNIT STRESSES FOR REINFORCED CONCRETE ARE AS FOLLOWS:
   - A. CONCRETE fc' = 4,000 PSI OR AS OTHERWISE SPECIFIED.
   - B. STEEL fy = 60,000 PSI OR AS OTHERWISE SPECIFIED.
4. SURVEY DATA:
   - BASIS OF ELEVATION: NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88) MEASURED IN U.S. SURVEY FEET
   - BASIS OF BEARING: NORTH AMERICAN HORIZONTAL DATUM 1983 (NAD83), CALIFORNIA STATE PLANE COORDINATE SYSTEM ZONE III, U.S. FEET
5. SEE SHTS G-5 THRU G-14 FOR SURVEY LAYOUT AND SURVEY LAYOUT DATA

USERNAME: jennford Tue 05 Jul 2011 04:32pm
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\G-02

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN APRIL 2002.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION

REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

INDEX MAP AND GENERAL NOTES

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
G-2
SHEET NUMBER:
2 OF 76

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX

USERNAME: jennford Tue 05 Jul 2011 04:33pm
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G-3	DRAWING INDEX	3 OF 76
G-4	ABBREVIATIONS, LEGEND AND SYMBOLS	4 OF 76
G-5	SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 0+00 TO STA 12+00 (A-LINE)	5 OF 76
G-6	SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 12+00 TO STA 22+50 (A-LINE)	6 OF 76
G-7	SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 22+50 TO STA 34+00 (A-LINE)	7 OF 76
G-8	SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 34+00 TO STA 46+00 (A-LINE)	8 OF 76
G-9	SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 46+00 TO STA 57+50 (A-LINE)	9 OF 76
G-10	SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 57+50 TO STA 68+50 (A-LINE)	10 OF 76
G-11	SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 68+50 TO STA 78+50 (A-LINE)	11 OF 76
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D-4	TREE REMOVAL PLAN STA 34+00 TO STA 46+00 (A-LINE)	19 OF 76
D-5	TREE REMOVAL PLAN STA 46+00 TO STA 57+50 (A-LINE)	20 OF 76
D-6	TREE REMOVAL PLAN STA 57+50 TO STA 68+50 (A-LINE)	21 OF 76
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D-8	TREE REMOVAL PLAN STA 78+50 TO STA 86+00 (A-LINE)	23 OF 76
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X-17	CROSS SECTIONS STA 79+00 TO STA 82+00	75 OF 76
X-18	CROSS SECTIONS STA 84+00 TO STA 87+00	76 OF 76

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK
PROJECT

DRAWING INDEX

SCALE
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VERIFY SCALES
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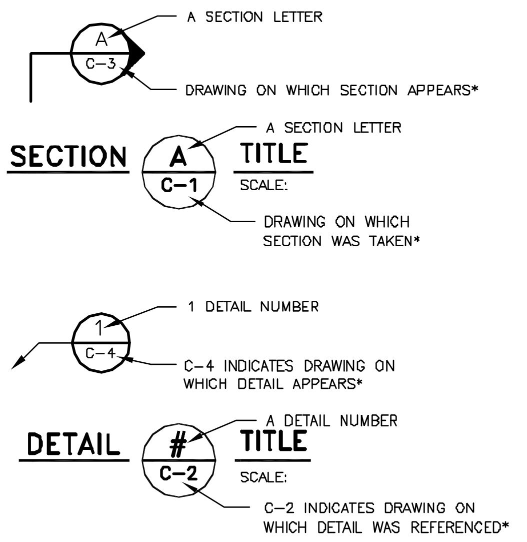
PROJECT NUMBER
40174004
SHEET CODE:
G-3
SHEET NUMBER:
3 OF 76

ABBREVIATIONS

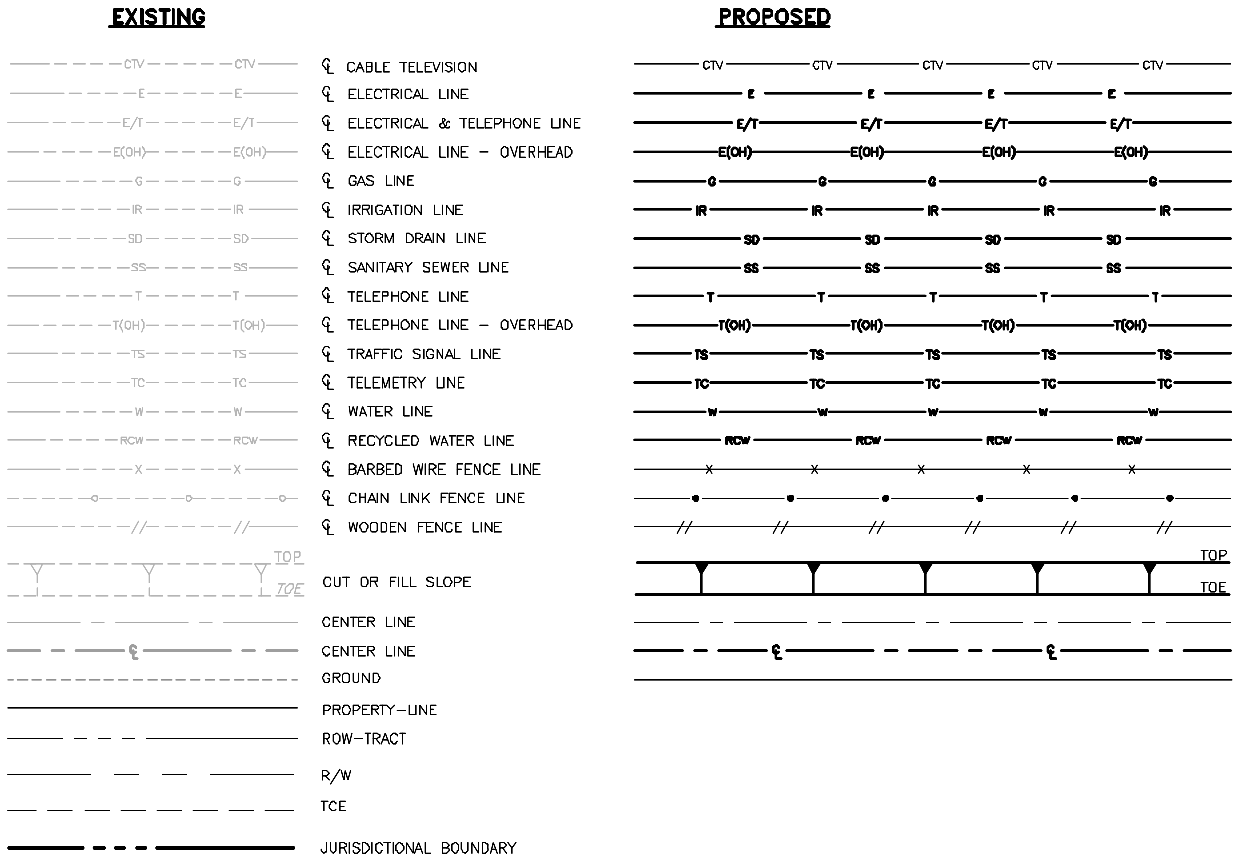
ABM	–	AIR BLOWN MORTAR
ABS	–	ACRYLONITRILE–BUTADIENCE–STYRENE
AC	–	ASPHALT CONCRETE
ACP	–	ASBESTOS CEMENT PIPE
AISI	–	AMERICAN IRON & STEEL INSTITUTE
ALIGN	–	ALIGNMENT
AMP	–	AMPERES
ANSI	–	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	–	APPROXIMATE
ARV	–	AIR RELEASE VALVE
ASA	–	AMERICAN STANDARD ASSOCIATION
ASTM	–	AMERICAN SOCIETY FOR TESTING MATERIALS
AWG	–	AMERICAN WIRE GAGE
AWWA	–	AMERICAN WATER WORKS ASSOCIATION
BC	–	BEGIN CURVE
BM	–	BENCH MARK
BP	–	BEGIN POINT
BT	–	BACKHOE TRENCH
BVCE	–	BEGIN VERTICAL CURVE ELEVATION
BVCS	–	BEGIN VERTICAL CURVE STATION
BW	–	BOTH WAYS
℄	–	CENTERLINE
CB	–	CATCH BASIN (INLET)
CCCL	–	CEMENT MORTAR COATED & LINED STEEL PIPE
CCEM	–	CEMENT CONDUIT
CCTL	–	CORROSION CONTROL TEST LEADS
CCP	–	CONCRETE CYLINDER PIPE
CFM	–	CUBIC FEET PER MINUTE
CI	–	CAST IRON
CIDH	–	CAST IN DRILLED HOLE
CIP	–	CAST IRON PIPE
CL	–	CLEARANCE
CLR	–	CLEAR
CLSM	–	CONTROLLED LOW–STRENGTH MATERIAL
CMC	–	CEMENT MORTAR COAT
CML	–	CEMENT MORTAR LINE
CMP	–	CORRUGATED METAL PIPE
CO	–	CLEAN OUT
CONC	–	CONCRETE
CONT	–	CONTINUOUS
CP	–	CEMENT PIPE
CPC	–	PLASTIC CONDUIT
CSP	–	CORRUGATED STEEL PIPE
CTP	–	CABLE TELEVISION POLE
CTV	–	CABLE TV
CU FT	–	CUBIC FEET
CYL	–	CYLINDER
CIPP	–	CAST–IN–PLACE PIPE
DH	–	DRILL HOLES
DIA	–	DIAMETER
DICL	–	DUCTILE IRON CEMENT LINED
DIP	–	DUCTILE IRON PIPE
DPDT	–	DOUBLE POLE DOUBLE THROW
D/S	–	DOWNSTREAM
DWR	–	DEPARTMENT OF WATER RESOURCES
EC	–	END CURVE
ELEC	–	ELECTRICAL
ELEV	–	ELEVATION
EP	–	EDGE OF PAVEMENT, END POINT
EVCE	–	END VERTICAL CURVE ELEVATION
EVCS	–	END VERTICAL CURVE STATION
EXIST	–	EXISTING
FF	–	FULL FORCE
FG	–	FINAL GRADE
FH	–	FIRE HYDRANT
FKCL	–	FIBERGLASS–KRAFT WRAP CEMENT LINED
FLG	–	FLANGE
FP	–	FEEDER PRESSURE
FT	–	FEET
GA	–	GAGE
GALV	–	GALVANIZED
GFI	–	GROUND FAULT INTERRUPTER
HC	–	HOUSE CONNECTION (SANITARY)
HMW/PE	–	HIGH MOLECULAR WEIGHT POLYETHYLENE
HORIZ	–	HORIZONTAL
HP	–	HORSEPOWER
ID	–	INSIDE DIAMETER
IF	–	INSIDE FACE
IL	–	INDUCTIVE LOOP
IN	–	INCH
INSUL	–	INSULATION
INV	–	INVERT
IP	–	IRON PIPE
IPS	–	IRON PIPE SIZE
JT	–	JOINT TRENCH
KV	–	KILO VOLT
LB	–	CONDUIT FITTING ELBOW
LG	–	LONG
LLV	–	LONG LEG VERTICAL
LT	–	LEFT
MAINT	–	MAINTENANCE
MAX	–	MAXIMUM
MCD	–	MULTIPLE CONDUITS
MCI	–	MCI TELECOMMUNICATION CORP.
MH	–	MANHOLE
MIN	–	MINIMUM
MON	–	MONUMENT
MW	–	MONITORING WELL
N	–	NITROGEN
N/A	–	NOT APPLICABLE
NE	–	NORTHEAST
NEMA	–	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NO	–	NUMBER
NTS	–	NOT TO SCALE
NW	–	NORTHWEST
OC	–	ON CENTER
OD	–	OUTSIDE DIAMETER
OF	–	OUTSIDE FACE
OH	–	OVERHEAD
OW	–	OBSERVATION WELL
ℙ	–	PROPERTY LINE
PCC	–	PORTLAND CEMENT CONCRETE
PCCP	–	PRESTRESSED CONCRETE CYLINDER PIPE
PE	–	PLAIN END
PG&E	–	PACIFIC GAS AND ELECTRIC
PI	–	POINT OF INTERSECTION
PK	–	PARKER–KALON SURVEY NAIL
PL	–	PLASTIC LINE
POT	–	POINT ON TANGENT
PP	–	POWER POLE
PRC	–	POINT OF REVERSE CURVE
PSI	–	POUND PER SQUARE INCH
PT&T	–	PACIFIC TELEPHONE AND TELEGRAPH
PUE	–	PUBLIC UTILITY EASEMENT
PV	–	PRECAST VAULT
PVC	–	POLYVINYL CHLORIDE
PVMT	–	PAVEMENT
PW	–	PUMPING WELL
R	–	RADIUS
RCB	–	REINFORCED CONCRETE BOX
RCP	–	REINFORCED CONCRETE PIPE
RE	–	REFERENCE ELECTRODE
REBAR	–	REINFORCING BAR
REINF	–	REINFORCED
REQ'D	–	REQUIRED
RP	–	RADIUS POINT
RR	–	RAILROAD
RT	–	RIGHT
RTU	–	REMOTE TERMINAL UNIT
R/W	–	RIGHT OF WAY
S	–	SLOPE
SCHED	–	SCHEDULE
SCVWD	–	SANTA CLARA VALLEY WATER DISTRICT
SD	–	STORM DRAIN
SE	–	SOUTHEAST
SHT	–	SHEET
SJMW	–	SAN JOSE MUNICIPAL WATER
SJWC	–	SAN JOSE WATER COMPANY
SOMCL	–	STANDARD OIL MASTIC CEMENT LINED
SPECS	–	SPECIFICATIONS
SPRR	–	SOUTHERN PACIFIC RAILROAD
SQ	–	SQUARE
SS	–	SANITARY SEWER
SSTL	–	STAINLESS STEEL
ST	–	STREET
STA	–	STATION
STD	–	STANDARD
STL	–	STEEL
STRD	–	STRANDED
SW	–	SOUTHWEST
SYM	–	SYMMETRICAL
T	–	TELEPHONE
T	–	THICKNESS OF PLATE OR DIMENSION OF WELD
TBM	–	TEMPORARY BENCH MARK
TC	–	TELEMETRY CABLE
TCA	–	TEMPORARY CONSTRUCTION AREA
TCE	–	TEMPORARY CONSTRUCTION EASEMENT
TCS	–	TELEMETRY CABLE SPLICE
TEL	–	TELEPHONE
THW	–	THERMAL PLASTIC MOISTURE AND HEAT RESISTANT
THWN	–	THERMAL PLASTIC WITH NYLON COATING MOISTURE AND HEAT RESISTANT
TOB	–	TOP OF BANK
TP	–	TEST PIT LOCATION
TR	–	TAPE WRAPPED
TS	–	TRAFFIC SIGNAL
TYP	–	TYPICAL
UG	–	UNDERGROUND
UON	–	UNLESS OTHERWISE NOTED
UPRR	–	UNION PACIFIC RAILROAD
U/S	–	UPSTREAM
USGS	–	UNITED STATES GEOLOGICAL SURVEY
V	–	VOLTAGE
VAC	–	VOLTAGE ALTERNATING CURRENT
VCD	–	VACANT CONDUIT
VCP	–	VITRIFIED CLAY PIPE
VERT	–	VERTICAL
W	–	WATER
WP	–	WORK POINT
WSP	–	WELDED STEEL PIPE
WSCL	–	WRAPPED STEEL CEMENT LINED
WV	–	WATER VALVE
WWF	–	WELDED WIRE FABRIC
W/	–	WITH
&	–	AND
@	–	AT
℄	–	CENTERLINE
∅	–	DIAMETER
ℙ	–	PROPERTY LINE

DETAIL AND SECTION DESIGNATION

* IF SECTION OR DETAIL APPEARS ON THE SAME DRAWING AS THE CALLOUT, THE DRAWING REFERENCE IS REPLACED WITH A DASH (–)


A
C–3
A SECTION LETTER
DRAWING ON WHICH SECTION APPEARS*
SECTION
A
C–1
A SECTION LETTER
TITLE
SCALE:
DRAWING ON WHICH SECTION WAS TAKEN*
1
C–4
1 DETAIL NUMBER
C–4 INDICATES DRAWING ON WHICH DETAIL APPEARS*
DETAIL
#
C–2
A DETAIL NUMBER
TITLE
SCALE:
C–2 INDICATES DRAWING ON WHICH DETAIL WAS REFERENCED*

LINE TYPE LEGEND



- ℄ CABLE TELEVISION
- ℄ ELECTRICAL LINE
- ℄ ELECTRICAL & TELEPHONE LINE
- ℄ ELECTRICAL LINE – OVERHEAD
- ℄ GAS LINE
- ℄ IRRIGATION LINE
- ℄ STORM DRAIN LINE
- ℄ SANITARY SEWER LINE
- ℄ TELEPHONE LINE
- ℄ TELEPHONE LINE – OVERHEAD
- ℄ TRAFFIC SIGNAL LINE
- ℄ TELEMETRY LINE
- ℄ WATER LINE
- ℄ RECYCLED WATER LINE
- ℄ BARBED WIRE FENCE LINE
- ℄ CHAIN LINK FENCE LINE
- ℄ WOODEN FENCE LINE
- CUT OR FILL SLOPE
- CENTER LINE
- CENTER LINE
- GROUND
- PROPERTY–LINE
- ROW–TRACT
- R/W
- TCE
- JURISDICTIONAL BOUNDARY

SYMBOLS LEGEND

SURVEY

△	HORIZONTAL CONTROL
⊙	VERTICAL CONTROL
△	HORIZONTAL VERTICAL CONTROL
⊕	TEMPORARY BENCH MARK

TRAFFIC CONTROL

—o—	SIGN–1
o o	SIGN–2
⊠	BUS STOP
⇨	TRAFFIC DIRECTION
●	TRAFFIC CONE
▮	CONSTRUCTION SIGN
☼	FLASHING ARROW SIGN
I	TYPE I – TRAFFIC BARRICADE
II	TYPE III – TRAFFIC BARRICADE
▬	K–RAIL BARRIER

MISCELLANEOUS

☼	ELECTROLIER
o—☼	ELECTROLIER
→	GUY WIRE
⏢	STORM DRAIN OUTFALL

EXISTING		PROPOSED	
EXISTING JOINT POLE	JP	PROPOSED JOINT POLE	JP
EXISTING POWER POLE	PP	PROPOSED POWER POLE	PP
EXISTING TELEPHONE POLE	TP	PROPOSED TELEPHONE POLE	TP
EXISTING ELECTRICAL MANHOLE	Ⓔ	PROPOSED ELECTRICAL MANHOLE	● E
EXISTING ELECTRIC METER	□ EM	PROPOSED ELECTRIC METER	□ EM
EXISTING STORM DRAIN MANHOLE	SD	PROPOSED STORM DRAIN MANHOLE	● SD
EXISTING CATCH BASIN / SD INLET	▤ CB	PROPOSED CATCH BASIN / SD INLET	◪ CB
EXISTING SANITARY CLEANOUT	Ⓢ CO	PROPOSED SANITARY CLEANOUT	Ⓢ CO
EXISTING SANITARY MANHOLE	Ⓢ	PROPOSED SANITARY MANHOLE	● SS
EXISTING TELEPHONE MANHOLE	Ⓣ	PROPOSED TELEPHONE MANHOLE	● T
EXISTING WATER VALVE	⋈	PROPOSED WATER VALVE	⋈
EXISTING WATER METER	□ WM	PROPOSED WATER METER	□ WM
EXISTING BLOWOFF	♉	PROPOSED BLOWOFF	♉
EXISTING FIRE HYDRANT	HOH	PROPOSED FIRE HYDRANT	HOH
EXISTING GAS VALVE	⋈ GV	PROPOSED GAS VALVE	⋈ GV
EXISTING GAS METER	□ GM	PROPOSED GAS METER	□ GM
EXISTING DEEP ANODE BED	Ⓐ	PROPOSED DEEP ANODE BED	Ⓐ
EXISTING REFERENCE ELECTRODE TEST STATION	Ⓡ	PROPOSED REFERENCE ELECTRODE TEST STATION	Ⓡ
EXISTING INSULATION JOINT	IJ	PROPOSED INSULATION JOINT	IJ
EXISTING PRECAST VAULT	PV	PROPOSED PRECAST VAULT	PV
EXISTING TELEMETRY CABLE PULLBOX	TL	PROPOSED TELEMETRY CABLE PULLBOX	TL
EXISTING VENTILATION STRUCTURE	V	PROPOSED VENTILATION STRUCTURE	V
EXISTING TREE 4 INDICATES TREE NUMBER	4 ❋	EXISTING TREE TO BE REMOVED. 4 INDICATES TREE NUMBER	4 ☒

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06–24–11			

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

ABBREVIATIONS, LEGEND AND SYMBOLS

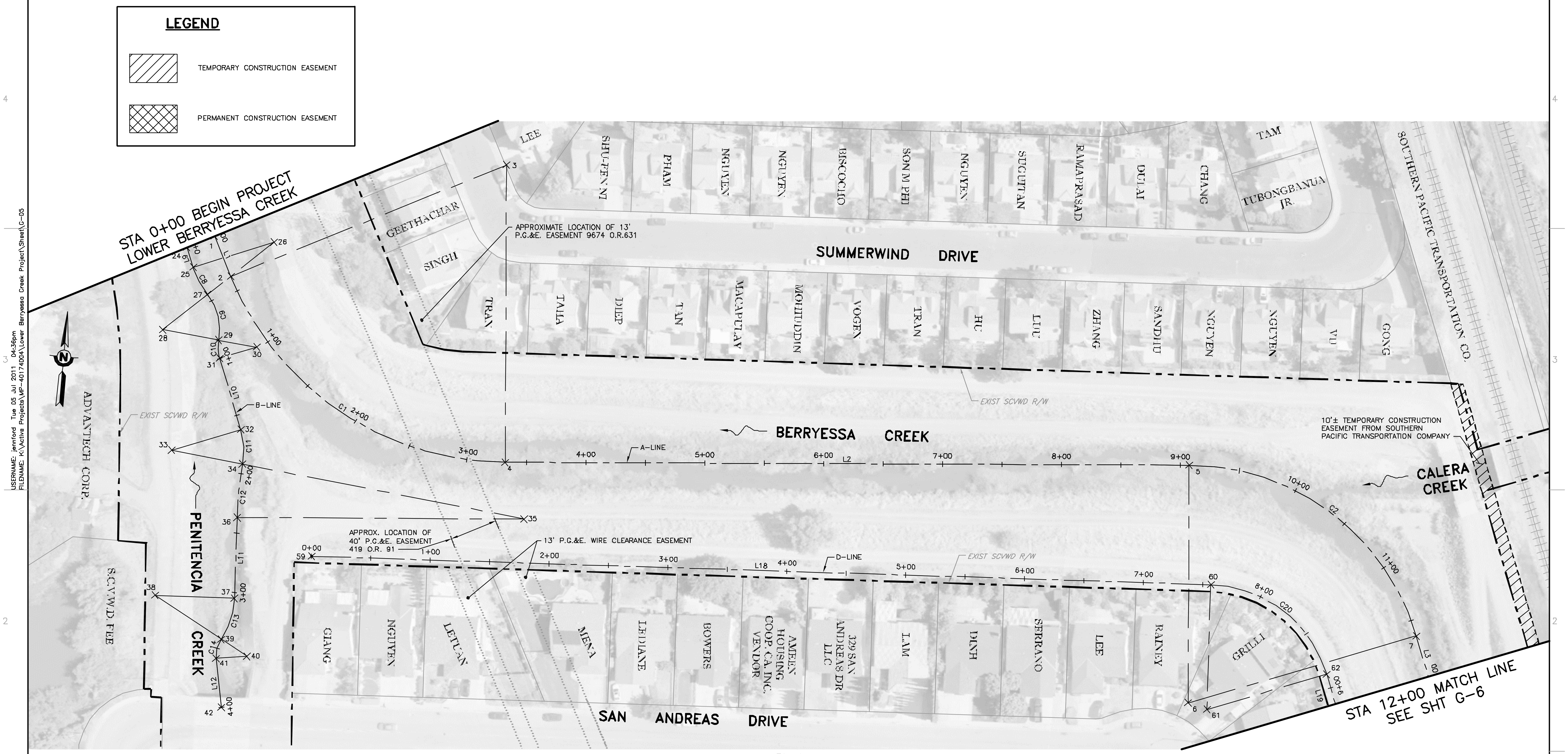
SCALE
NOT TO SCALE
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
G–4
SHEET NUMBER:
4 OF 76

USERNAME: jennford Tue 05 Jul 2011 04:34pm
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\G-04

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX

USERNAME: jennford Tue 05 Jul 2011 04:36pm
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\G-05



PLAN
SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. SURVEY LAYOUT DATA SHOWN ON SHEETS G-13 AND G-14.
2. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

REGISTERED PROFESSIONAL ENGINEER TONY TEGHEN NDAH No. C67534 Exp. 06/30/11 CIVIL STATE OF CALIFORNIA

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK
PROJECT

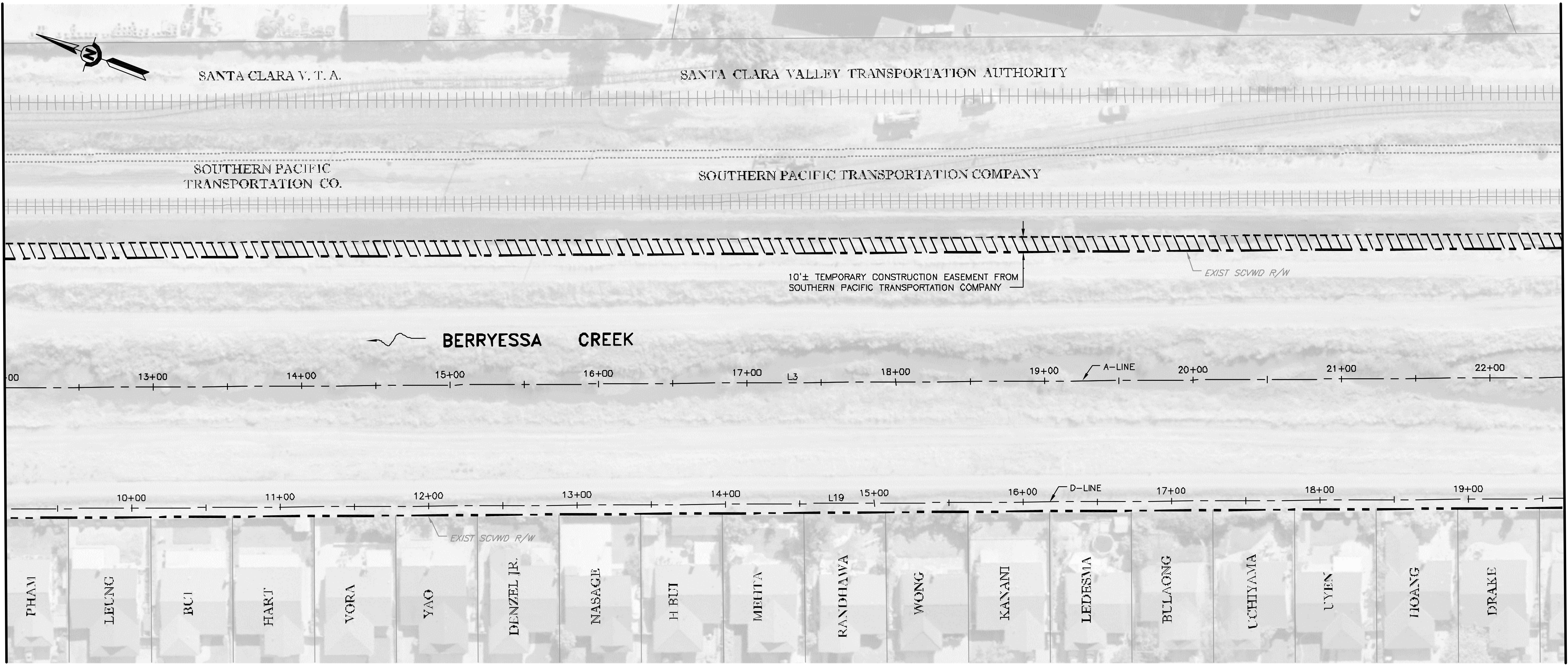
SURVEY LAYOUT,
RIGHT OF WAY MAP AND STAGING PLAN
STA 0+00 TO STA 12+00 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
G-5
SHEET NUMBER:
5 OF 76

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX

STA 12+00 MATCH LINE
SEE SHT G-5



STA 22+50 MATCH LINE
SEE SHT G-7

PLAN
SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES
1. SURVEY LAYOUT DATA SHOWN ON SHEETS G-13 AND G-14.
2. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 12+00 TO STA 22+50 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
G-6
SHEET NUMBER:
6 OF 76

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX

USERNAME: jennford Tue 05 Jul 2011 04:40pm
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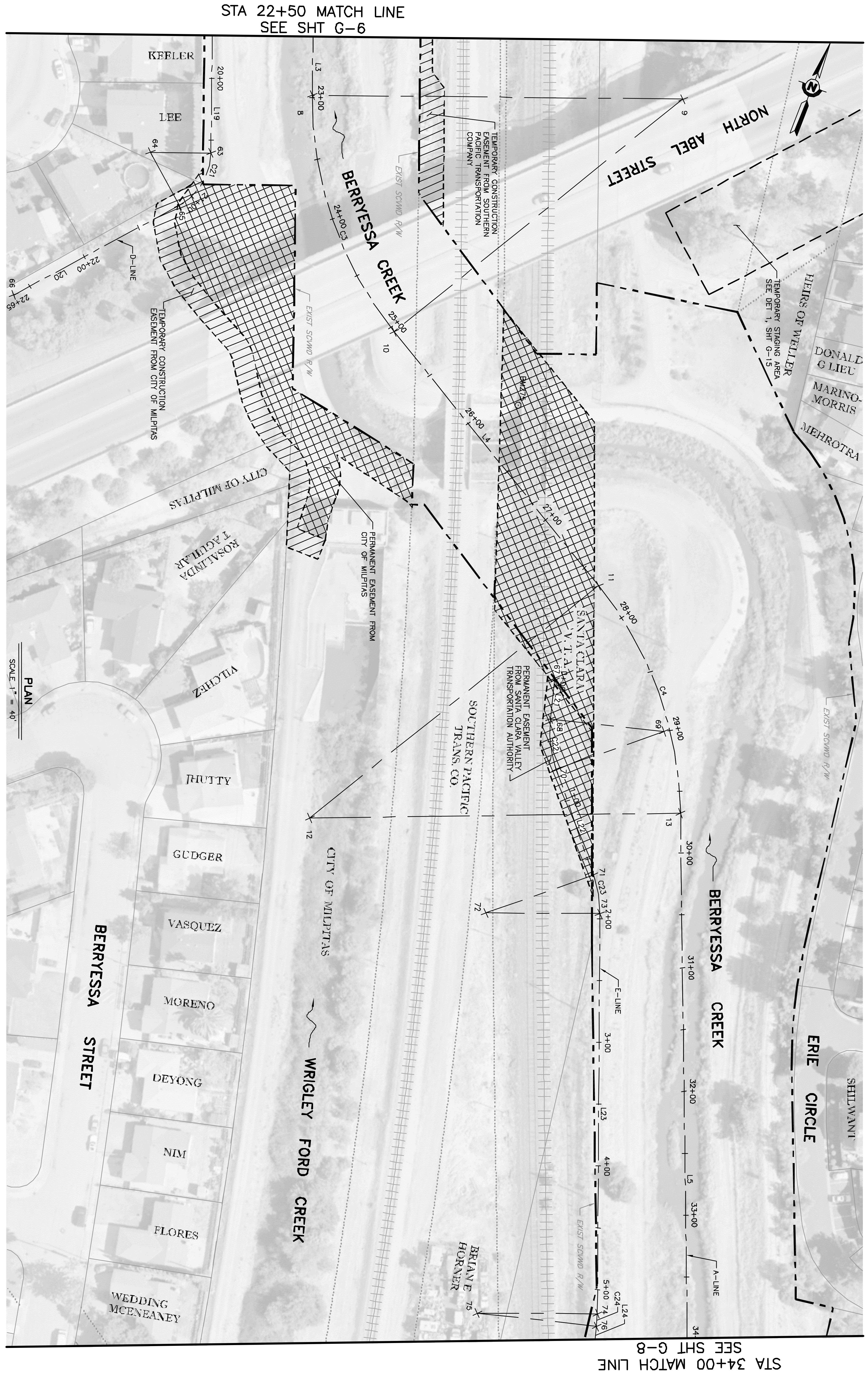


REV

DESCRIPTION

60% PRELIMINARY
06-24-11

DATE

APPR.

REFERENCE INFORMATION AND NOTES

1. SURVEY LAYOUT DATA SHOWN ON SHEETS G-13 AND G-14.
2. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67834
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN
STA 22+50 TO STA 34+00 (A-LINE)

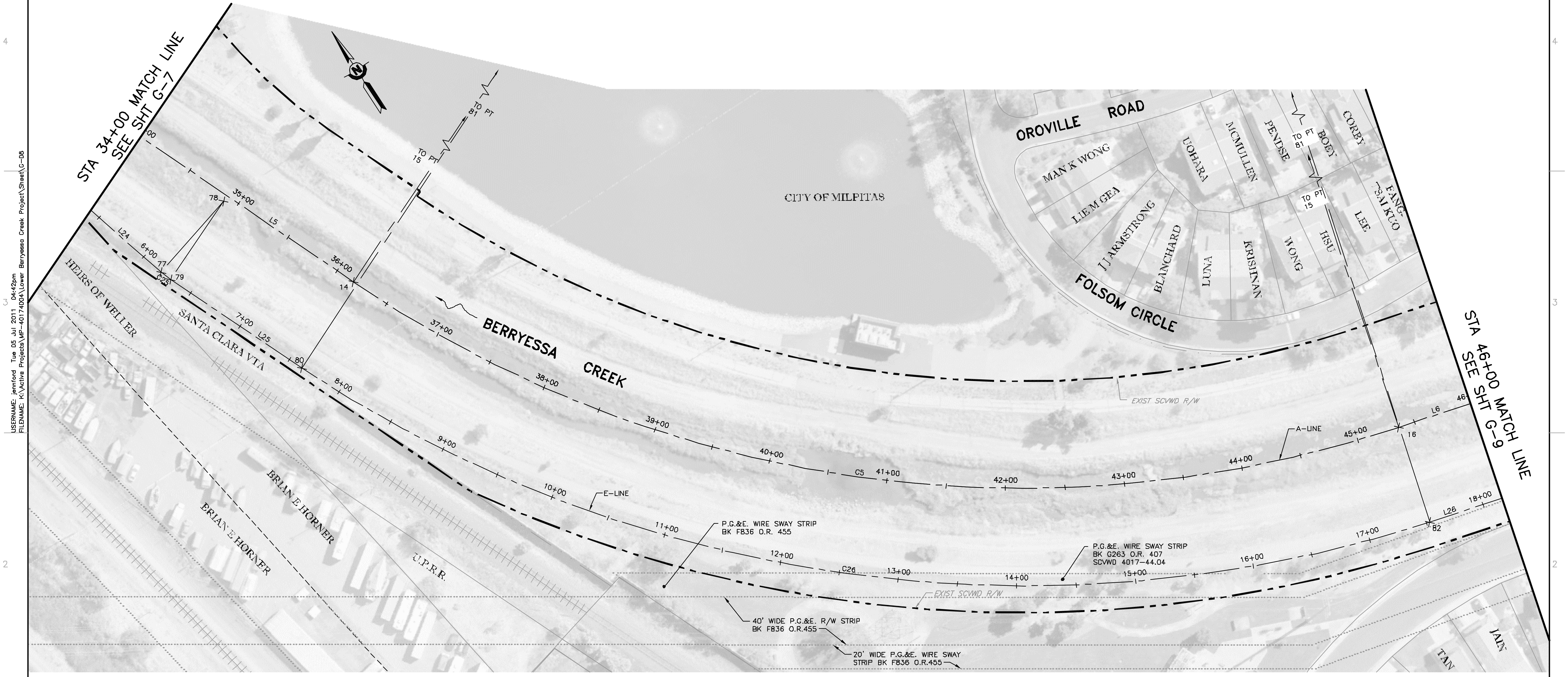
SCALE
AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

SHEET CODE:
G-7

SHEET NUMBER:
7 OF 76



PLAN

SCALE 1" = 40'

USERNAME: jennford Tue 05 Jul 2011 04:42pm
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\G-08

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. SURVEY LAYOUT DATA SHOWN ON SHEETS G-13 AND G-14.
2. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION

REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67834
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

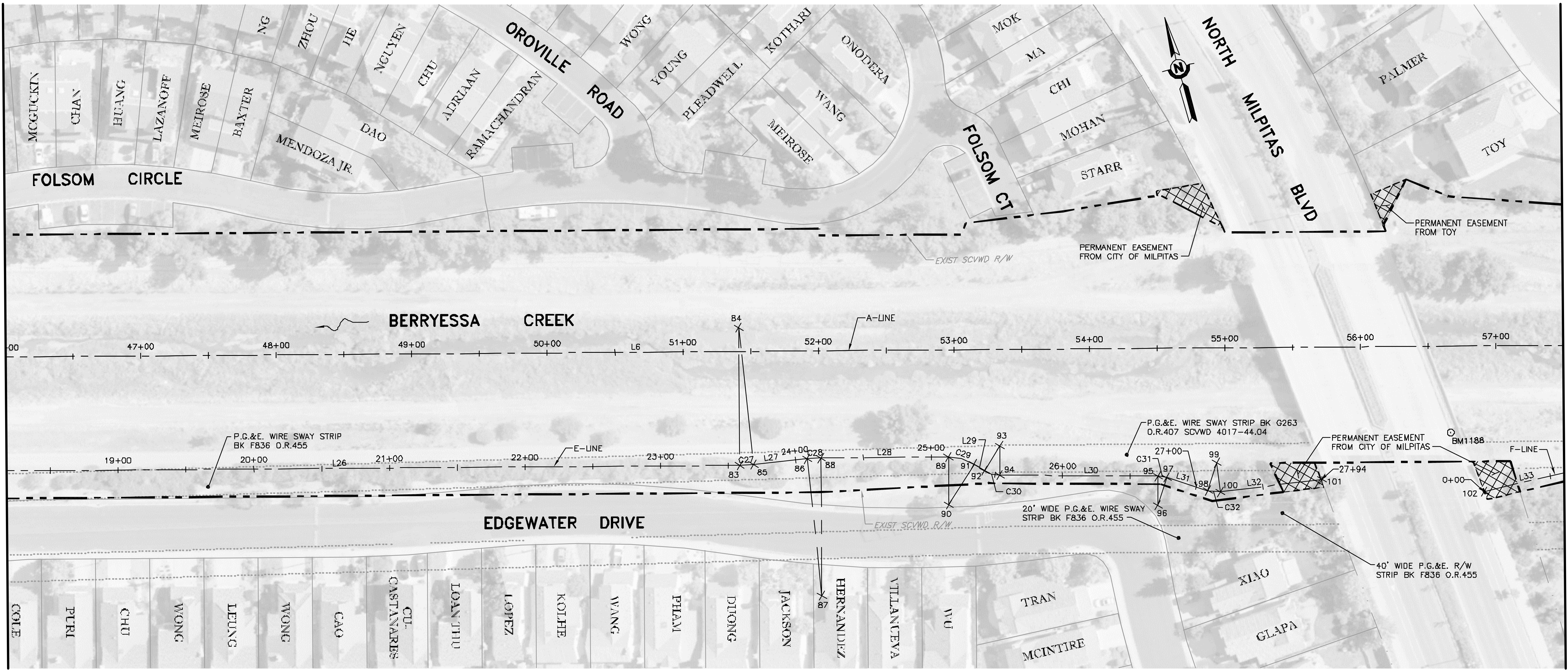
SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 34+00 TO STA 46+00 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
G-8
SHEET NUMBER:
8 OF 76

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX

STA 46+00 MATCH LINE
SEE SHT G-8



STA 57+50 MATCH LINE
SEE SHT G-10

PLAN
SCALE 1" = 40'

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. SURVEY LAYOUT DATA SHOWN ON SHEETS G-13 AND G-14.
2. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

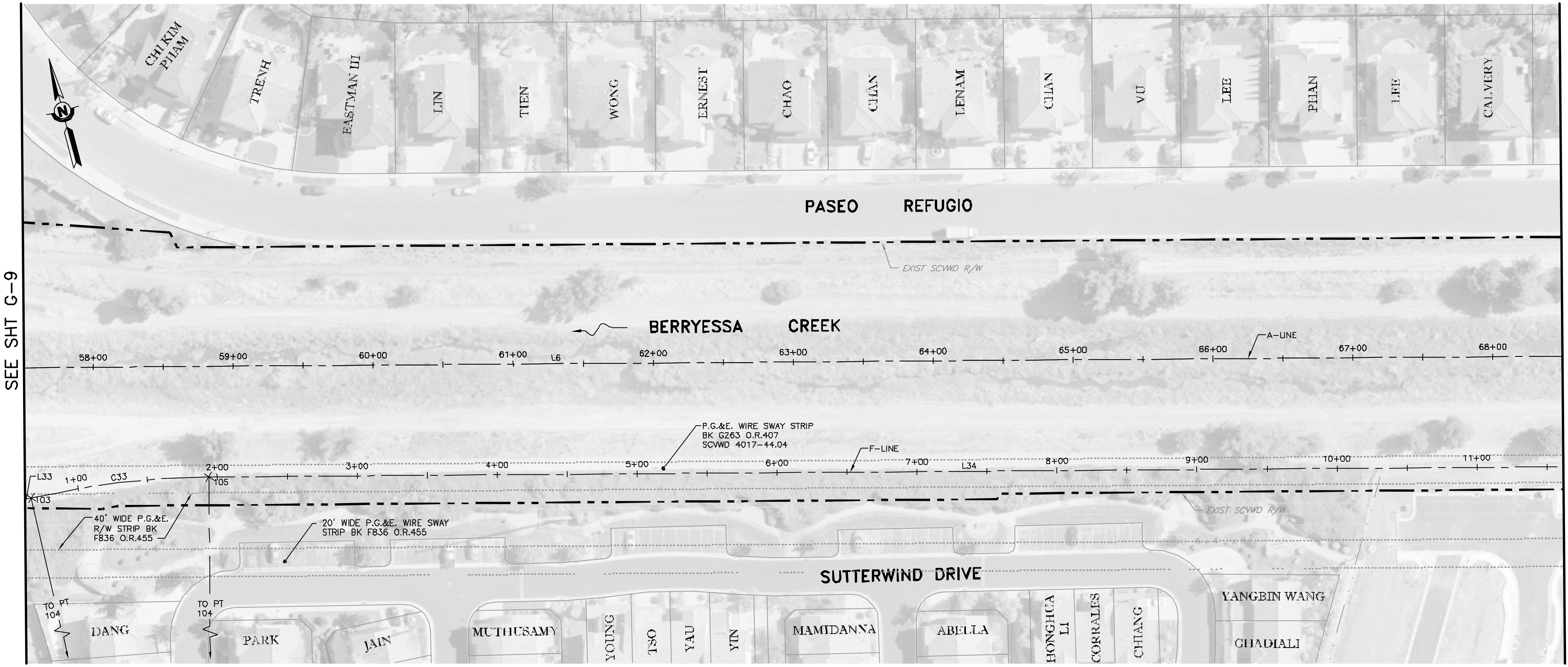
LOWER BERRYESSA CREEK PROJECT

SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 46+00 TO STA 57+50 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
G-9
SHEET NUMBER:
9 OF 76

STA 57+50 MATCH LINE
SEE SHT G-9



STA 68+50 MATCH LINE
SEE SHT G-11

PLAN
SCALE 1" = 40'

USERNAME: jennford Tue 05 Jul 2011 04:50pm
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\G-10

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES
1. SURVEY LAYOUT DATA SHOWN ON SHEETS G-13 AND G-14.
2. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE: JUNE 2011
DESIGN: B. TAN
DRAWN: J. FORD
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER TONY TEGHEN NDAH No. C67534 Exp. 06/30/11 CIVIL STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

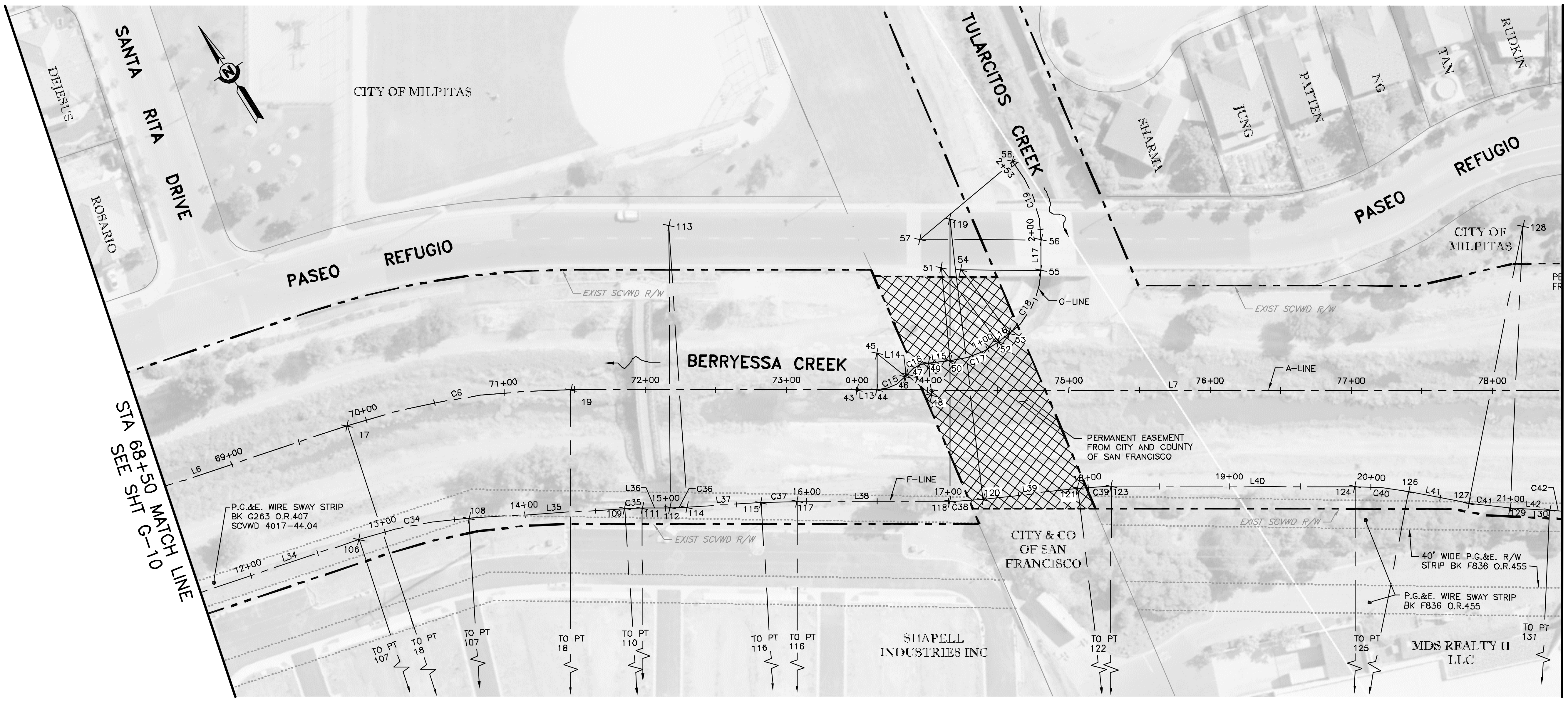
LOWER BERRYESSA CREEK PROJECT

SURVEY LAYOUT,
RIGHT OF WAY MAP AND STAGING PLAN
STA 57+50 TO STA 68+50 (A-LINE)

SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: G-10
SHEET NUMBER: 10 OF 76

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX



PLAN

SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. SURVEY LAYOUT DATA SHOWN ON SHEETS G-13 AND G-14.
2. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 68+50 TO STA 78+50 (A-LINE)

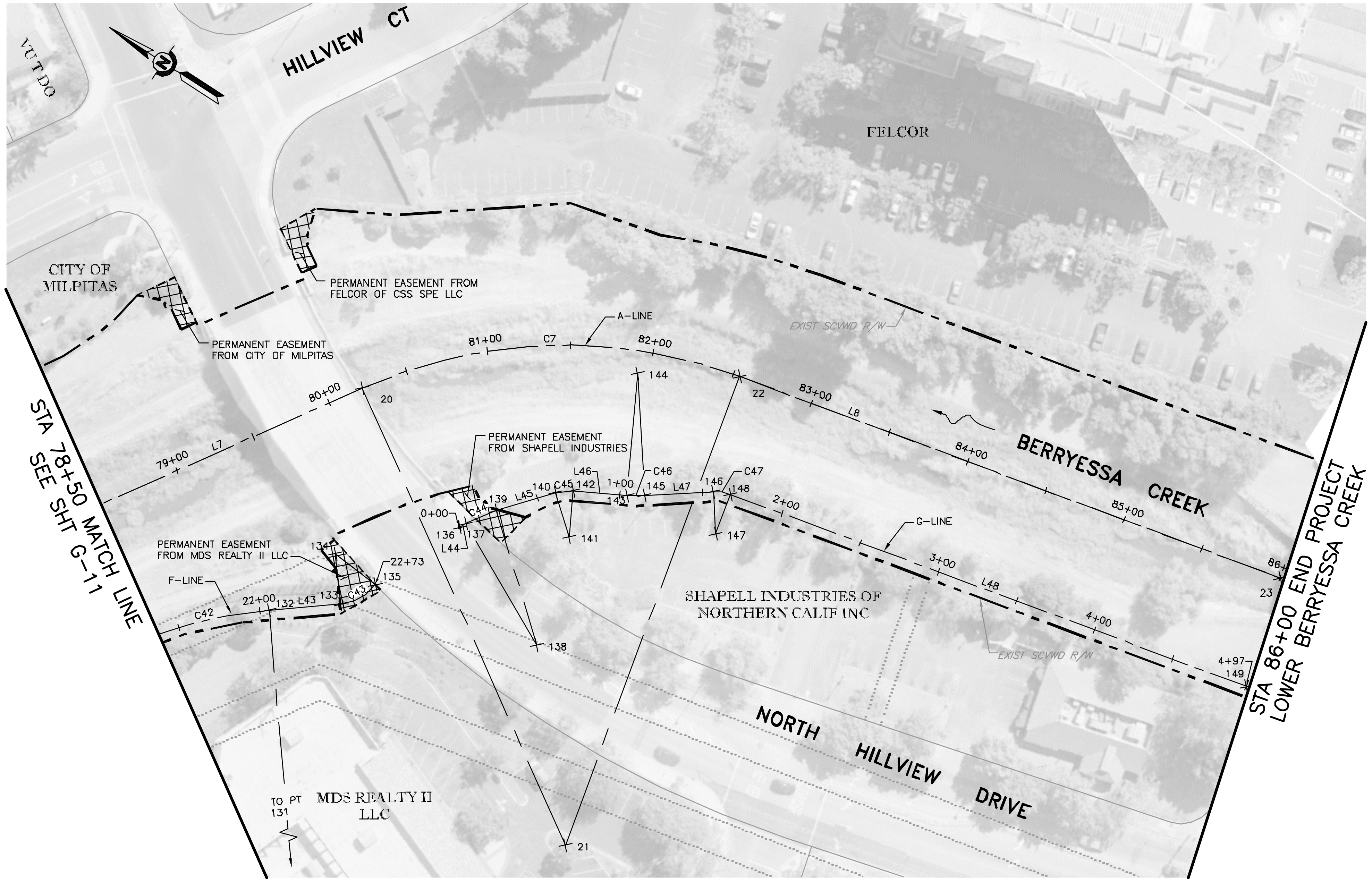
SCALE
AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

SHEET CODE:
G-11

SHEET NUMBER:
11 OF 76



PLAN
SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES
1. SURVEY LAYOUT DATA SHOWN ON SHEETS G-13 AND G-14.
2. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

SURVEY LAYOUT, RIGHT OF WAY MAP AND STAGING PLAN STA 78+50 TO STA 86+00 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
G-12
SHEET NUMBER:
12 OF 76

USERNAME: jennford Wed 06 Jul 2011 07:44am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\G-13

A-LINE POINT TABLE

POINT	NORTHING	EASTING	STATION	DESCRIPTION
1	1988053.4031	6150974.8190	0+00.00	BP
2	1988020.7294	6150991.4820	0+36.68	BC
3	1988134.3078	6151214.1925		RP
4	1987885.1702	6151234.9392	3+32.25	EC
5	1987932.8986	6151808.0887	9+07.38	BC
6	1987733.5885	6151824.6860		RP
7	1987806.5187	6152010.9149	11+63.50	EC
8	1986750.2461	6152424.5682	22+97.89	BC
9	1986859.6415	6152703.9115		RP
10	1986597.7405	6152557.5971	25+04.31	EC
11	1986468.9411	6152788.1465	27+68.39	BC
12	1986207.0402	6152641.8322		RP
13	1986323.0177	6152918.5075	29+67.71	EC
14	1985731.1713	6153166.5993	36+16.56	BC
15	1986117.7630	6154088.8502		RP
16	1985149.9259	6153837.2726	45+36.12	EC
17	1984533.5937	6156208.3468	69+85.98	BC
18	1984049.6751	6156082.5580		RP
19	1984468.7302	6156355.3084	71+47.32	EC
20	1983991.7557	6157088.1344	80+21.70	BC
21	1983740.3226	6156924.4841		RP
22	1983805.5981	6157217.2965	82+54.04	EC
23	1983467.9300	6157292.5715	86+00.00	EP

B-LINE POINT TABLE

POINT	NORTHING	EASTING	STATION	DESCRIPTION
24	1988042.0047	6150952.5998	0+00.00	BP
25	1988025.7322	6150959.2253	0+17.57	BC
26	1988052.5299	6151025.0419		RP
27	1988003.9070	6150973.2176	0+43.64	PRC
28	1987971.1707	6150938.3259		RP
29	1987966.5957	6150985.9512	0+84.28	PRC
30	1987963.4848	6151018.3350		RP
31	1987951.5470	6150988.0715	0+99.61	EC
32	1987893.1218	6151011.1180	1+62.42	BC
33	1987870.8260	6150954.5956		RP
34	1987864.4320	6151015.0191	1+91.66	PRC
35	1987839.0624	6151254.7639		RP
36	1987819.1792	6151014.5019	2+36.98	EC
37	1987751.4686	6151017.9985	3+04.78	BC
38	1987748.0364	6150951.5362		RP
39	1987716.1593	6151009.9559	3+41.46	PRC
40	1987703.6956	6151032.7975	3+59.55	RP
41	1987699.6933	6151007.0864	3+58.47	EC
42	1987658.9573	6151015.1630	4+00.00	EP

C-LINE POINT TABLE

POINT	NORTHING	EASTING	STATION	DESCRIPTION
43	1984358.1699	6156525.1739	0+00.00	BP
44	1984350.5124	6156536.9389	0+14.04	BC
45	1984372.1896	6156551.0480		RP
46	1984347.5169	6156558.8084	0+36.84	EC
47	1984348.0819	6156560.6048	0+38.73	BC
48	1984326.1710	6156567.4966		RP
49	1984346.5248	6156578.1414	0+56.79	EC
50	1984339.4323	6156591.7028	0+72.10	BC
51	1984398.2532	6156622.4656		RP
52	1984332.0700	6156627.5682	1+09.19	EC
53	1984332.8387	6156637.5386	1+19.19	BC
54	1984389.2989	6156633.1856		RP
55	1984358.2688	6156680.5548	1+70.95	EC
56	1984376.3121	6156692.3744	1+92.52	BC
57	1984423.2908	6156620.6589		RP
58	1984433.8899	6156705.7340	2+52.86	EC

D-LINE POINT TABLE

POINT	NORTHING	EASTING	STATION	DESCRIPTION
59	1987792.2738	6151079.5285	0+00.00	BP
60	1987834.3250	6151834.9546	7+56.60	BC
61	1987729.4873	6151840.7904		RP
62	1987767.7754	6151938.5606	8+88.18	EC
63	1986676.2359	6152366.0225	20+60.43	BC
64	1986658.3681	6152320.3964		RP
65	1986627.1243	6152358.1433	21+12.60	EC
66	1986509.8647	6152261.0857	22+64.82	EP

E-LINE POINT TABLE

POINT	NORTHING	EASTING	STATION	DESCRIPTION
67	1986384.9038	6152783.8375	0+00.00	BP
68	1986354.4358	6152792.3662	0+31.64	BC
69	1986379.3292	6152881.2953		RP
70	1986318.2945	6152811.9929	0+73.11	EC
71	1986250.2218	6152871.9447	1+63.82	BC
72	1986189.1871	6152802.6423		RP
73	1986223.2411	6152888.4815	1+95.62	EC
74	1985922.0867	6153007.9550	5+19.61	BC
75	1985886.2365	6152917.5881		RP
76	1985912.4348	6153011.2100	5+29.80	EC
77	1985825.9863	6153035.4009	6+19.57	BC
78	1985847.3694	6153111.8156		RP
79	1985816.3433	6153038.7826	6+29.80	EC
80	1985694.0237	6153090.7469	7+62.70	BC
81	1986136.0216	6154104.0986	7+52.11	RP
82	1985068.7400	6153815.7347	17+52.85	EC
83	1984916.3694	6154401.9173	23+58.51	BC
84	1985014.6534	6154427.4649		RP
85	1984914.3074	6154411.8732	23+68.68	EC
86	1984908.1935	6154451.2211	24+08.50	BC
87	1984807.8475	6154435.6294		RP
88	1984906.1315	6154461.1770	24+18.67	EC
89	1984882.4370	6154552.3318	25+12.86	BC
90	1984848.4979	6154543.5098		RP
91	1984872.4622	6154569.1107	25+32.64	EC
92	1984865.7856	6154575.3604	25+41.78	BC
93	1984880.5278	6154591.1094		RP
94	1984859.7229	6154585.4070	25+53.67	EC
95	1984828.8703	6154697.9701	26+70.38	BC
96	1984808.0653	6154692.2676		RP
97	1984826.1956	6154703.9576	26+76.96	EC
98	1984808.9558	6154730.6952	27+08.78	BC
99	1984827.0861	6154742.3853		RP
100	1984805.7224	6154739.3926	27+18.13	EC
101	1984795.2419	6154814.2097	27+93.68	EP

F-LINE POINT TABLE

POINT	NORTHING	EASTING	STATION	DESCRIPTION
102	1984755.6062	6154927.5431	0+00.00	BP
103	1984753.3087	6154993.5174	0+66.01	BC
104	1984170.1622	6154973.2100		RP
105	1984734.8931	6155120.0137	1+94.10	EC
106	1984461.5207	6156171.6342	12+80.67	BC
107	1984165.6954	6156094.7334		RP
108	1984431.7414	6156245.2189	13+60.28	EC
109	1984377.3116	6156341.4463	14+70.83	BC
110	1984202.7413	6156243.8491		RP
111	1984370.9599	6156352.0272	14+83.18	EC
112	1984360.2077	6156368.7471	15+03.06	BC
113	1984528.4263	6156476.9252		RP
114	1984354.0997	6156378.8932	15+14.90	EC
115	1984328.3013	6156424.7696	15+67.53	BC
116	1983979.8810	6156228.8365		RP
117	1984315.0741	6156446.6256	15+93.08	EC
118	1984256.1928	6156537.2481	17+01.16	BC
119	1984423.9013	6156646.2154		RP
120	1984244.5168	6156557.7778	17+24.79	EC
121	1984214.6391	6156618.3809	17+92.36	BC
122	1984035.2546	6156529.9434		RP
123	1984202.9174	6156638.9809	18+16.07	EC
124	1984108.7626	6156783.7590	19+88.77	BC
125	1983941.0998	6156674.7214		RP
126	1984084.9294	6156813.6929	20+27.09	EC
127	1984054.6566	6156845.0240	20+70.66	BC
128	1984198.4861	6156983.9954		RP
129	1984035.8214	6156867.6331	21+00.11	EC
130	1984019.5123	6156890.4318	21+28.15	BC
131	1983801.1945	6156734.2580		RP
132	1983966.1508	6156946.0182	22+05.47	EC
133	1983932.2319	6156972.4402	22+48.46	BC
134	1983951.2894	6156996.1481	22+48.00	RP
135	1983920.9808	6156993.5714	22+73.07	EC

G-LINE POINT TABLE

POINT	NORTHING	EASTING	STATION	DESCRIPTION
136	1983897.2500	6157049.9078	0+00.00	BP
137	1983895.2588	6157053.8594	0+04.42	BC
138	1983820.0309	6157015.9508		RP
139	1983884.3326	6157070.3712	0+24.27	EC
140	1983860.2563	6157098.8191	0+61.54	BC
141	1983839.0100	6157080.8377		RP
142	1983852.1783	6157105.3598	0+71.99	EC
143	1983823.3950	6157120.8165	1+04.67	BC
144	1983858.1756	6157185.5847		RP
145	1983814.7367	6157126.2747	1+14.91	EC
146	1983781.3337	6157150.7391	1+56.31	BC
147	1983766.3627	6157130.2982		RP
148	1983771.8853	6157155.0260	1+66.76	EC
149	1983449.4637	6157227.0343	4+97.13	EP

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. BASIS OF ELEVATION:
   NORTH AMERICAN VERTICAL DATUM 1988, U.S. FEET.
2. BASIS OF BEARING:
   CALIFORNIA COORDINATE SYSTEM, ZONE 3
   NORTH AMERICAN DATUM 1983, U.S. FEET.
3. FOR VERTICAL CONTROL USE ONLY.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK
PROJECT

SURVEY LAYOUT DATA

SCALE
NO SCALE
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
G-13
SHEET NUMBER:
13 OF 76

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 07:45am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\G-14

A-LINE TABLE

LINE	LENGTH	BEARING
L1	36.68	S27°01'15"E
L2	575.13	N85°14'23"E
L3	1134.38	S21°23'10"E
L4	264.09	S60°48'34"E
L5	641.74	S22°44'33"E
L6	2449.87	S75°25'45"E
L7	874.38	S56°56'28"E
L8	345.96	S12°34'02"E

B-LINE TABLE

LINE	LENGTH	BEARING
L9	17.57	S22°09'15"E
L10	62.81	S21°31'38"E
L11	67.80	S2°57'22"E
L12	41.53	S11°12'52"E

C-LINE TABLE

LINE	LENGTH	BEARING
L13	14.04	S56°56'28"E
L14	1.88	N72°32'23"E
L15	15.30	S62°23'27"E
L16	10.00	N85°35'29"E
L17	21.57	N33°13'39"E

D-LINE TABLE

LINE	LENGTH	BEARING
L18	756.60	N86°48'50"E
L19	1172.26	S21°23'10"E
L20	152.22	S39°36'54"W

E-LINE TABLE

LINE	LENGTH	BEARING
L21	31.64	S15°38'18"E
L22	90.71	S41°22'14"E
L23	323.99	S21°38'21"E
L24	89.77	S15°38'00"E
L25	132.90	S23°01'01"E
L26	605.66	S75°25'45"E
L27	39.82	S81°10'05"E
L28	94.18	S75°25'45"E
L29	9.15	S43°06'32"E
L30	116.71	S74°40'20"E
L31	31.81	S57°11'13"E
L32	75.55	S82°01'33"E

F-LINE TABLE

LINE	LENGTH	BEARING
L33	66.01	S88°00'20"E
L34	1086.57	S75°25'42"E
L35	110.55	S60°30'21"E
L36	19.88	S57°15'21"E
L37	52.63	S60°38'56"E
L38	108.07	S56°59'11"E
L39	67.57	S63°45'23"E
L40	172.70	S56°57'45"E
L41	43.57	S45°59'03"E
L42	28.03	S54°25'19"E
L43	43.00	S37°55'04"E

G-LINE TABLE

LINE	LENGTH	BEARING
L44	4.42	S63°15'20"E
L45	37.27	S49°45'28"E
L46	32.67	S28°14'09"E
L47	41.40	S36°13'09"E
L48	330.36	S12°35'23"E

A-LINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C1	250.00	295.57	67°44'22.15"
C2	200.00	256.12	73°22'26.96"
C3	300.00	206.42	39°25'24.31"
C4	300.00	199.32	38°04'00.98"
C5	1000.00	919.55	52°41'11.47"
C6	500.00	161.34	18°29'16.85"
C7	300.00	232.34	44°22'25.96"

B-LINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C8	71.06	26.07	21°01'13.74"
C9	47.84	40.63	48°39'42.13"
C10	32.53	15.34	27°00'52.09"
C11	60.76	29.24	27°34'04.12"
C12	241.08	45.32	10°46'16.75"
C13	66.55	36.68	31°34'32.25"
C14	26.02	17.02	37°28'02.82"

C-LINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C15	25.86	22.81	50°31'08.77"
C16	22.97	18.07	45°04'09.64"
C17	66.38	37.09	32°01'04.07"
C18	56.63	51.75	52°21'49.55"
C19	85.73	60.35	40°19'45.18"

D-LINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C20	105.00	131.58	71°48'00.43"
C21	49.00	52.17	61°00'03.87"

E-LINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C22	92.35	41.47	25°43'55.73"
C23	92.35	31.80	19°43'52.63"
C24	97.22	10.19	6°00'21.16"
C25	79.35	10.23	7°23'01.29"
C26	1105.55	990.15	51°18'53.75"
C27	101.55	10.17	5°44'19.95"
C28	101.55	10.17	5°44'19.95"
C29	35.07	19.78	32°19'13.00"
C30	21.57	11.88	31°33'47.70"
C31	21.57	6.58	17°29'06.70"
C32	21.57	9.35	24°50'20.00"

F-LINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C33	583.50	128.09	12°34'38.17"
C34	305.66	79.61	14°55'20.65"
C35	200.00	12.34	3°32'09.51"
C36	200.00	11.84	3°23'35.52"
C37	399.73	25.55	3°39'44.63"
C38	200.00	23.63	6°46'11.71"
C39	200.00	23.72	6°47'38.17"
C40	200.00	38.32	10°58'42.00"
C41	200.00	29.45	8°26'16.00"
C42	268.43	77.32	16°30'15.00"
C43	30.42	24.61	46°20'48.21"

G-LINE CURVE TABLE

CURVE	RADIUS	LENGTH	DELTA
C44	84.24	19.85	13°29'52.49"
C45	27.83	10.46	21°31'18.99"
C46	73.52	10.24	7°59'00.00"
C47	25.34	10.45	23°37'46.41"

BENCHMARK POINT TABLE (SEE NOTE 3)

POINT	NORTHING	EASTING	ELEV	DESCRIPTION
BM045	1983338	6157298	31.27	BRASS DISK ON TOP OF CONCRETE HEADWALL; SOUTHWEST CORNER OF CALAVERAS BOULEVARD BRIDGE OVER BERRYESSA CREEK; 200 FEET EAST FROM S. HILLVIEW DRIVE, CITY OF MILPITAS.
BM061	1983721	6151312	18.64	BRASS DISK ON CONCRETE BASE OF SIDEWALK'S GUARDRAIL; AT THE SOUTHWEST CORNER OF MARYLINN DRIVE BRIDGE OVER PENITENCIA CREEK, CITY OF MILPITAS.
BM062	1988375.3	6150755.4	25.49	BRASS DISK AT THE SOUTHWESTERLY CORNER OF BRIDGE FOR CALIFORNIA CIRCLE – MILMONT DRIVE OVER PENITENCIA CREEK AT 350 FEET EASTERLY FROM FAIRVIEW WAY, CITY OF SAN JOSE.
BM275	1986580	6152673	19.06	BRASS DISK AT THE NORTHEAST CORNER OF EXPOSED OPENING BETWEEN TWO SETS OF RAILROAD TRACKS; ON TOP OF 2 FOOT WIDE CONCRETE WALL FOR BERRYESSA CREEK. SITE IS ABOUT 200 FEET SOUTH FROM JACKLIN ROAD OVERPASS; ALSO ABOUT 1000 FEET SOUTHWEST FROM INTERSECTION OF JACKLIN ROAD AND N. MILPITAS BOULEVARD, CITY OF MILPITAS.
BM276	1988019	6152672	21.47	BRASS DISK ON TOP AND BACK OF SIDEWALK; 50 FEET NORTHWEST OF INTERSECTION FOR N. MILPITAS BOULEVARD AND HANSON COURT; 1 FOOT EAST OF FACE OF CONCRETE HEADWALL; CENTER OF CALERA CREEK, CITY OF MILPITAS.
BM277	1990417	6152209	25.39	BRASS DISK IN CENTER OF EAST SIDE OF CONCRETE SLAB FOR TELEPHONE ACCESS BOX; 2 FEET EAST FROM 6 FOOT TALL TELEPHONE CONTROL BOX; LOCATED ON WEST SIDE OF N. MILPITAS BOULEVARD; BETWEEN WASHINGTON STREET AND HOMME WAY, CITY OF SAN JOSE.
BM318	1991161	6154574	64.66	BRASS DISK ON TOP OF HETCH HETCHY PIPELINE WATER VAULT; 40 FEET NORTH OF CENTERLINE OF WASHINGTON AVENUE; 130 FEET WEST FROM CENTERLINE FOR ROGER STREET (NEAR MILPITAS HIGH SCHOOL); EAST SIDE OF STRUCTURE AND APPROXIMATELY IN THE MIDDLE OF ITS LENGTH; 2 FEET HIGHER THAN GROUND, CITY OF SAN JOSE.
BM1042	1984339	6153198	16.04	USCGS BRASS DISK (M874), ON TOP OF HEADWALL AT NORTHWEST CORNER BRIDGE FOR RAILROAD COURT OVER WRIGLEY FORD CREEK; 250 FEET NORTH FROM INTERSECTION OF RAILROAD COURT AND N. MAIN STREET; 400 FEET NORTH OF THE INTERSECTION OF THE SOUTHERN PACIFIC RAILROAD CROSSING AND MAIN STREET (THE OLD OAKLAND–SAN JOSE ROAD), CITY OF MILPITAS.
BM1188	1984804	6154915	27.05	BRASS DISK ON TOP OF CONCRETE SIDEWALK AT THE SOUTHEAST CORNER OF INTERSECTION FOR BERRYESSA CREEK AT NORTH MILPITAS BOULEVARD. DISK IS LOCATED AT CENTER OF SIDEWALK, CITY OF MILPITAS.

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. BASIS OF ELEVATION:
   NORTH AMERICAN VERTICAL DATUM 1988, U.S. FEET.
2. BASIS OF BEARING:
   CALIFORNIA COORDINATE SYSTEM, ZONE 3
   NORTH AMERICAN DATUM 1983, U.S. FEET.
3. FOR VERTICAL CONTROL USE ONLY.

DATE: JUNE 2011
DESIGN: B. TAN
DRAWN: J. FORD
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

SURVEY LAYOUT DATA

SCALE: NO SCALE
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: G-14
SHEET NUMBER: 14 OF 76

USERNAME: jennford Wed 06 Jul 2011 07:47am
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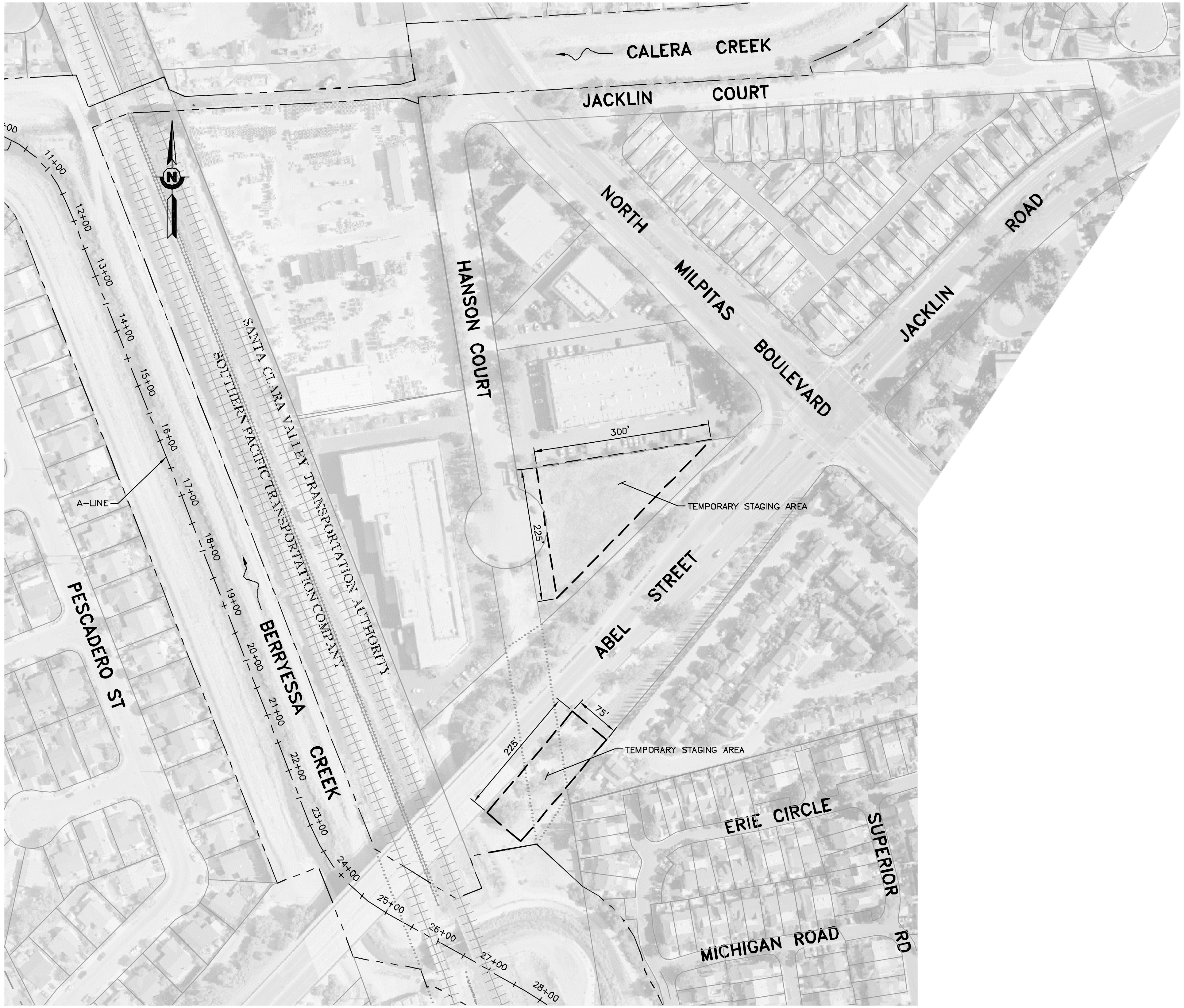

DETAIL (1 / G-7) **TEMPORARY STAGING AREAS**
HANSON COURT AND ABEL STREET
SCALE: 1" = 100'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES
1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

STAGING PLAN DETAIL

SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

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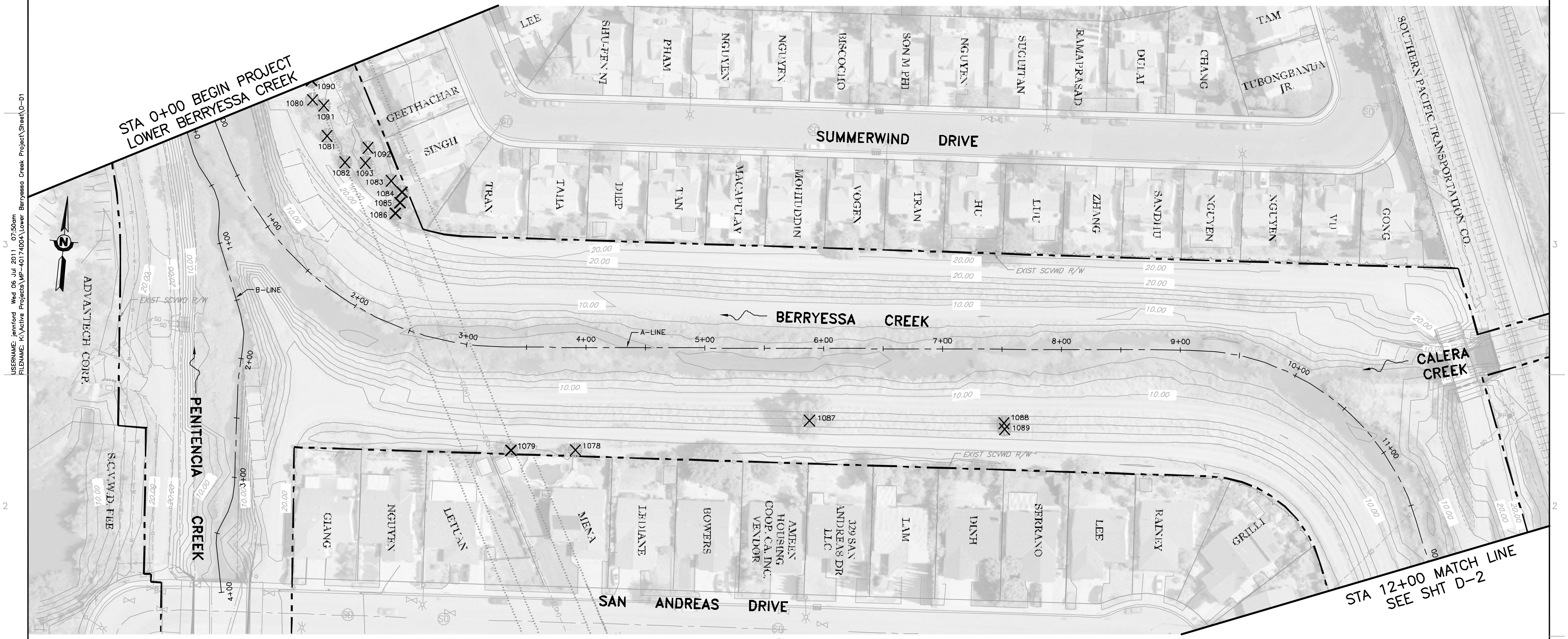
SHEET CODE: G-15
SHEET NUMBER: 15 OF 76

DOCUMENT NUMBER: BER_CY-G-4017-XXXXX



PLAN
SCALE 1" = 40'

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REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES
1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

TREE REMOVAL PLAN
STA 0+00 TO STA 12+00 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
D-1
SHEET NUMBER:
16 OF 76

DOCUMENT NUMBER: BER_CY-D-4017-XXXXX

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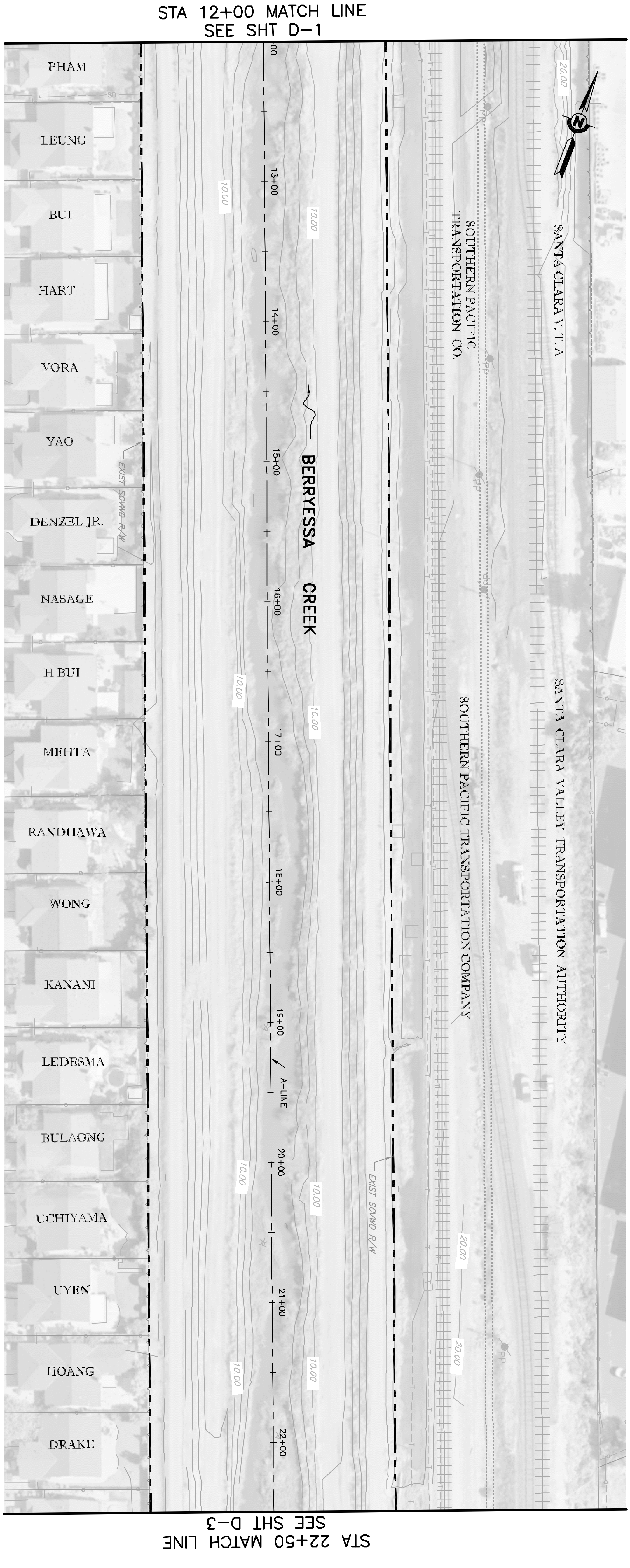


PLAN
SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67834
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

TREE REMOVAL PLAN
STA 12+00 TO STA 22+50 (A-LINE)

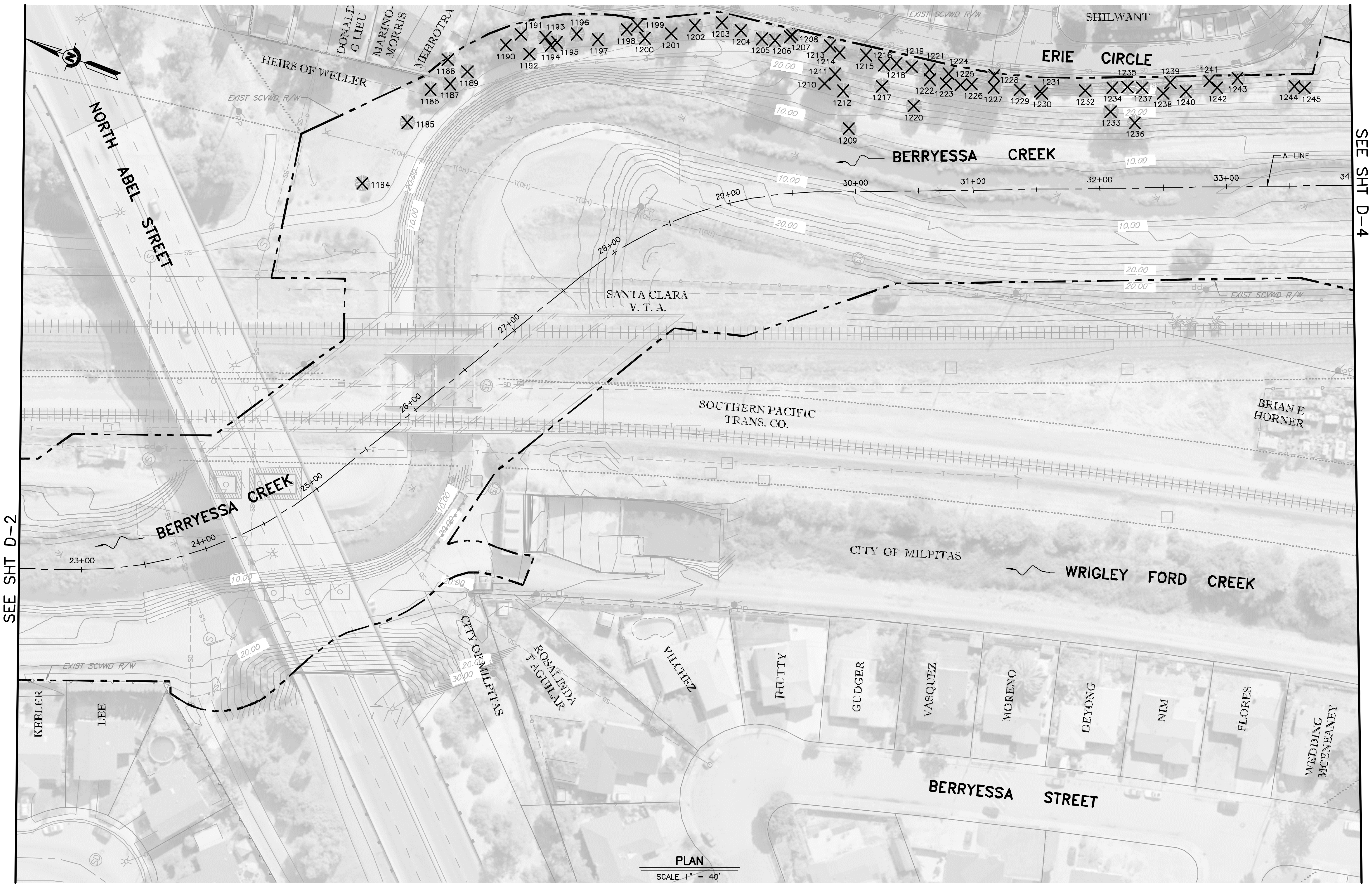
SCALE
AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

SHEET CODE:
D-2

SHEET NUMBER:
17 OF 76



PLAN
SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER   DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

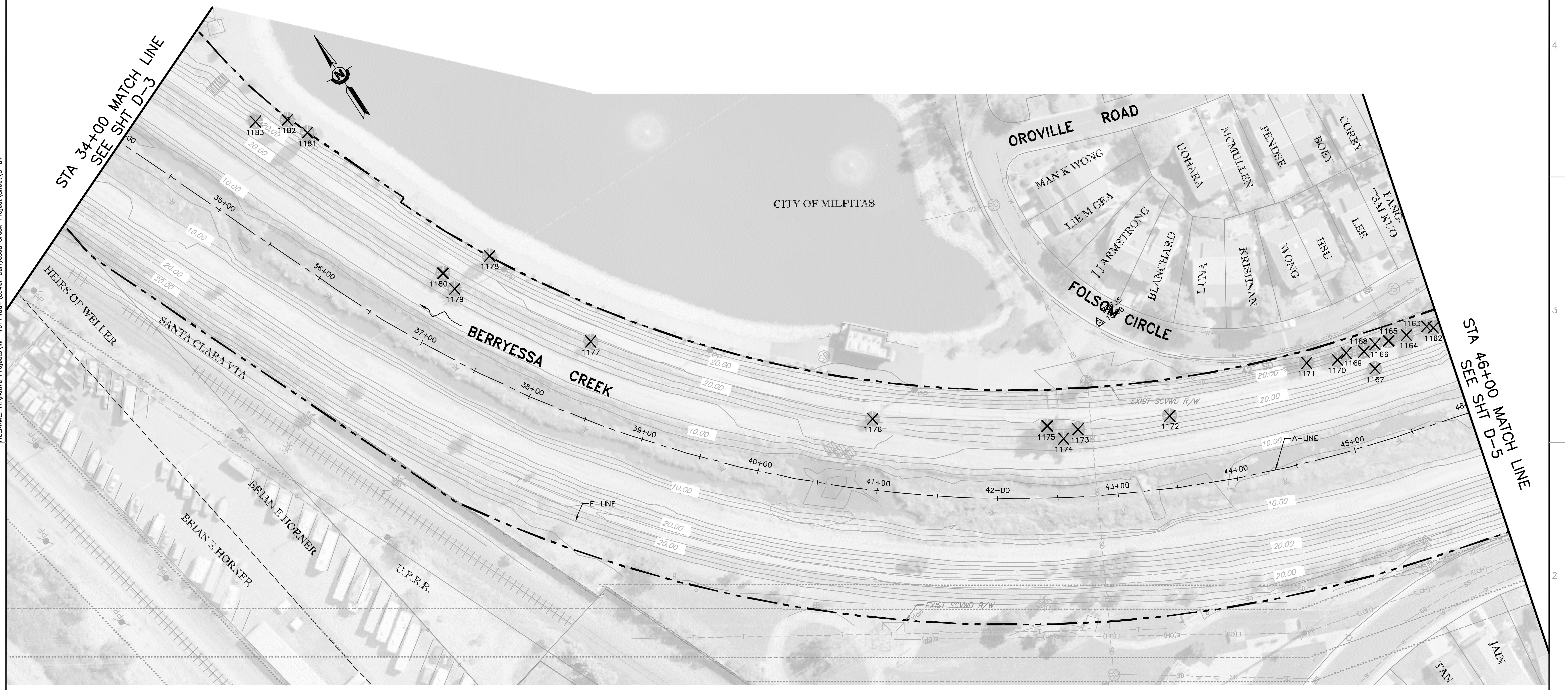
TREE REMOVAL PLAN
STA 22+50 TO STA 34+00 (A-LINE)

SCALE	AS SHOWN
VERIFY SCALES	0 1"
PROJECT NUMBER	40174004
SHEET CODE:	D-3
SHEET NUMBER:	18 OF 76

BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

USERNAME: jennford Wed 06 Jul 2011 07:58am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\D-03

USERNAME: jennford Wed 06 Jul 2011 08:06am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\D-04



PLAN
SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

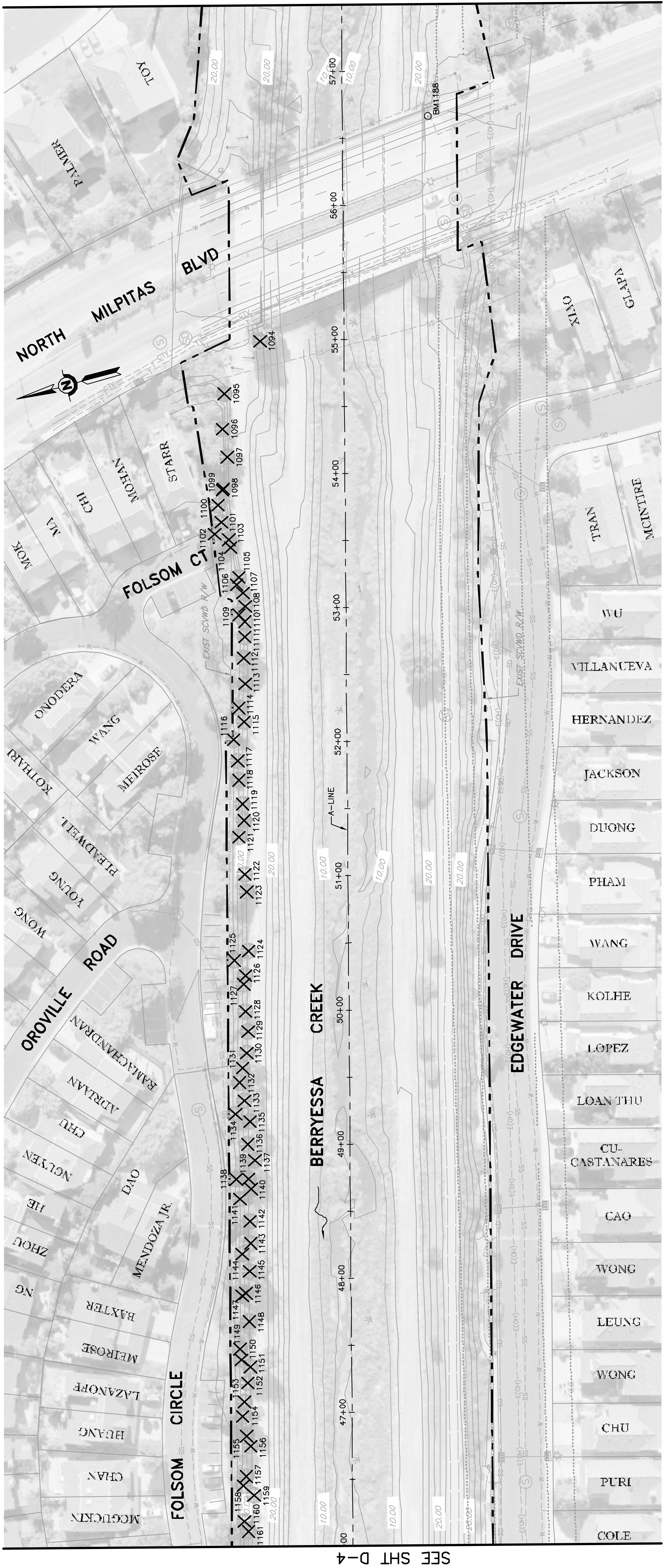
TREE REMOVAL PLAN
STA 34+00 TO STA 46+00 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
D-4
SHEET NUMBER:
19 OF 76

DOCUMENT NUMBER: BER_CY-D-4017-XXXXX

STA 57+50 MATCH LINE
SEE SHT D-6



STA 46+00 MATCH LINE
SEE SHT D-4

PLAN
SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES
1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67834
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:
LOWER BERRYESSA CREEK PROJECT
TREE REMOVAL PLAN
STA 46+00 TO STA 57+50 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
D-5
SHEET NUMBER:
20 OF 76

DOCUMENT NUMBER: BER_CY-D-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 08:09am
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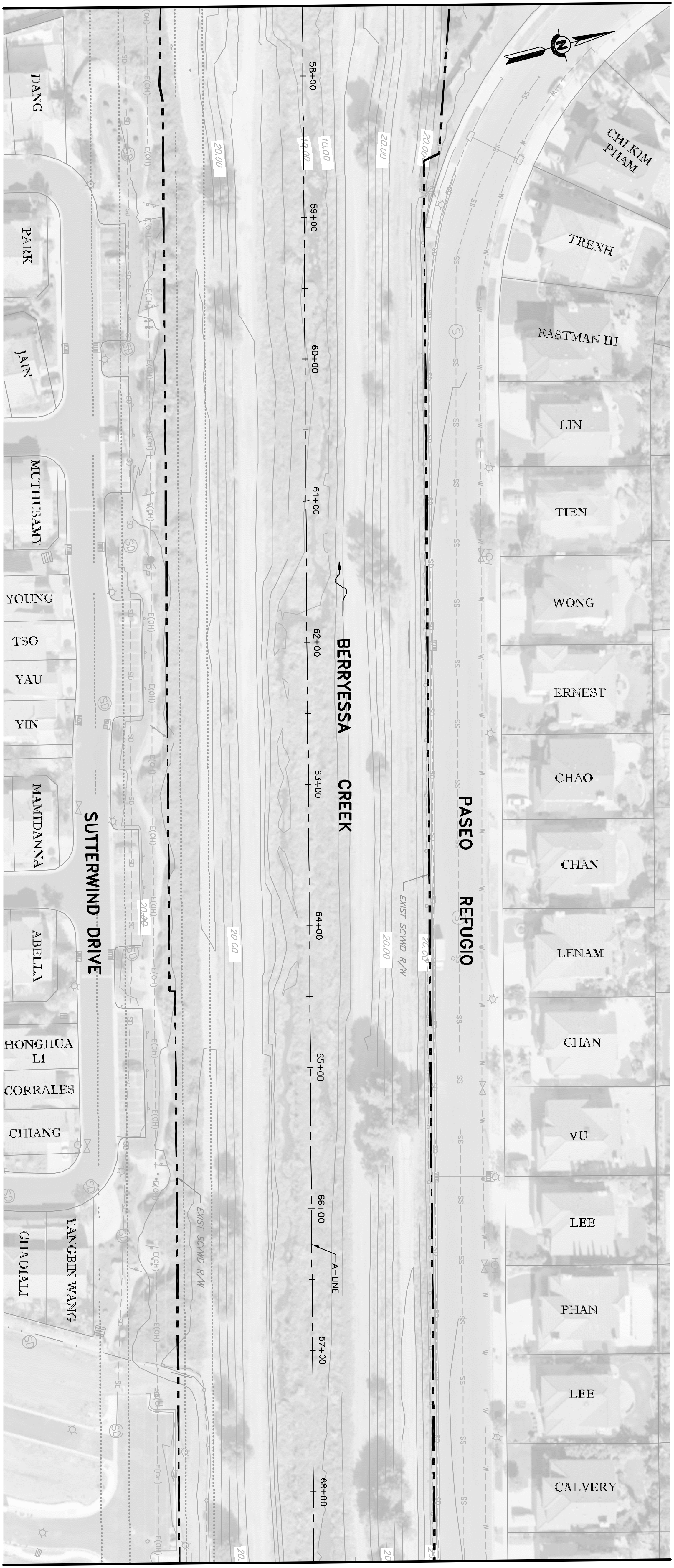
USERNAME: jennford Wed 06 Jul 2011 08:12am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\D-06

STA 57+50 MATCH LINE
SEE SHT D-5



STA 68+50 MATCH LINE
SEE SHT D-7

PLAN
SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES
1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE JUNE 2011
DESIGN B. TAN
DRAWN J. FORD
CHECKED T. NDAH

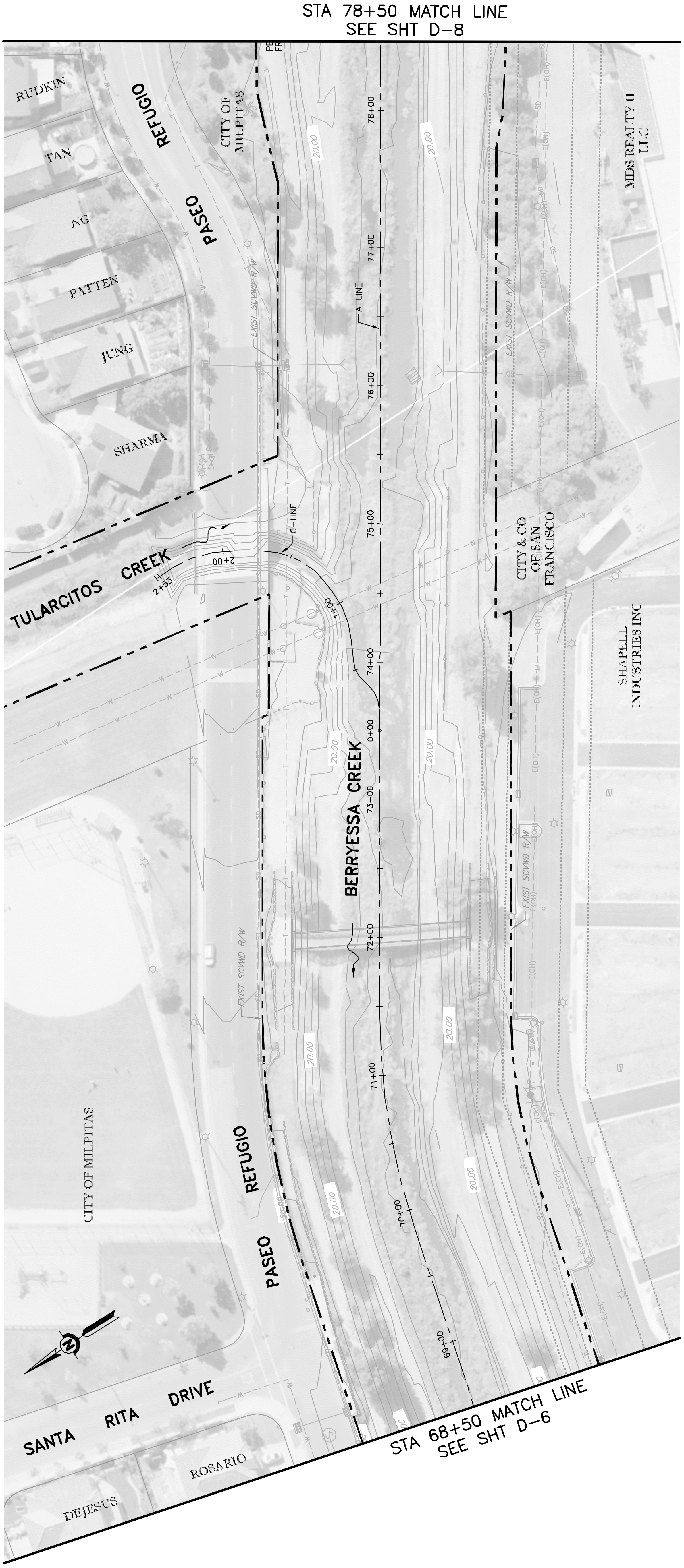
ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67834
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:
LOWER BERRYESSA CREEK PROJECT
TREE REMOVAL PLAN
STA 57+50 TO STA 68+50 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
D-6
SHEET NUMBER:
21 OF 76



PLAN
SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67834
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

TREE REMOVAL PLAN
STA 68+50 TO STA 78+50 (A-LINE)

SCALE
AS SHOWN

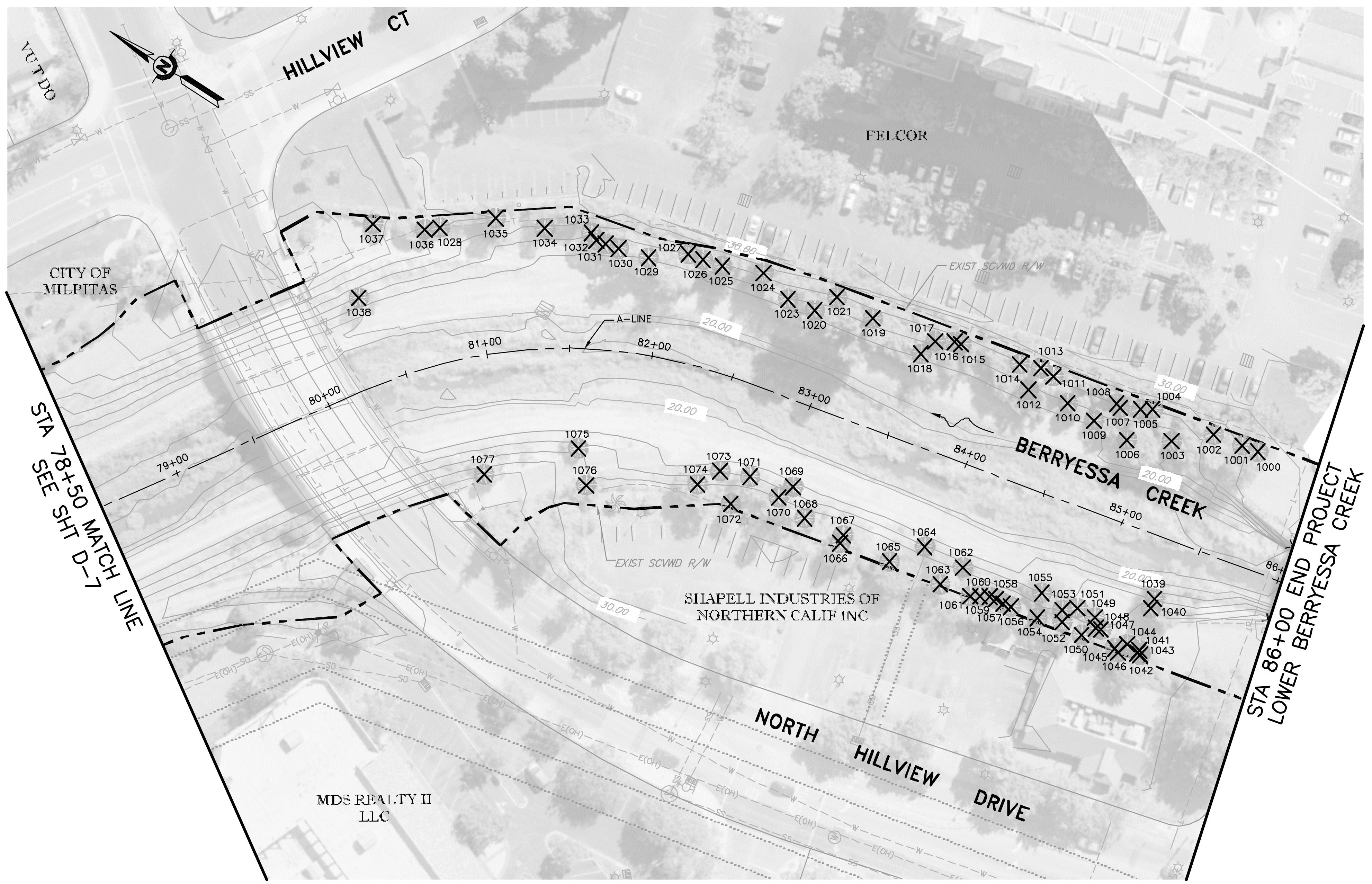
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

SHEET CODE:
D-7

SHEET NUMBER:
22 OF 76

USERNAME: jennford Wed 06 Jul 2011 08:16am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\D-08



PLAN

SCALE 1" = 40'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

TREE REMOVAL PLAN
STA 78+50 TO STA 86+00 (A-LINE)

SCALE
AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

SHEET CODE:
D-8

SHEET NUMBER:
23 OF 76

DOCUMENT NUMBER: BER_CY-D-4017-XXXXX

TREE TABLE

NO.	DESCRIPTION
1000	TOYON
1001	HOLLY OAK
1002	REDBUD
1003	HOLLY OAK
1004	HOLLY OAK
1005	TOYON
1006	HOLLY OAK
1007	HOLLY OAK
1008	HOLLY OAK
1009	HOLLY OAK
1010	HOLLY OAK
1011	HOLLY OAK
1012	HOLLY OAK
1013	MEXICAN FAN PALM
1014	PINE
1015	HOLLY OAK
1016	HOLLY OAK
1017	HOLLY OAK
1018	HOLLY OAK
1019	PINE
1020	PINE
1021	PINE
1022	REDBUD
1023	REDBUD
1024	HOLLY OAK
1025	HOLLY OAK
1026	TOYON
1027	OLIVE
1028	LONDON PLANE
1029	LOLLYPOP TREE
1030	LONDON PLANE
1031	LOLLYPOP TREE
1032	LOLLYPOP TREE
1033	LOLLYPOP TREE
1034	LOLLYPOP TREE
1035	ASH
1036	LOLLYPOP TREE
1037	LOLLYPOP TREE
1038	LOLLYPOP TREE
1039	PERUVIAN PEPPER
1040	HOLLY OAK
1041	HOLLY OAK
1042	HOLLY OAK
1043	HOLLY OAK
1044	HOLLY OAK
1045	HOLLY OAK
1046	ASH
1047	HOLLY OAK
1048	HOLLY OAK
1049	HOLLY OAK

TREE TABLE

NO.	DESCRIPTION
1050	HOLLY OAK
1051	HOLLY OAK
1052	ELDERBERRY
1053	HOLLY OAK
1054	HOLLY OAK
1055	HOLLY OAK
1056	GLOSSY PRIVET
1057	GLOSSY PRIVET
1058	GLOSSY PRIVET
1059	TOYON
1060	ITALIAN BUCKTHORN
1061	HOLLY OAK
1062	HOLLY OAK
1063	GLOSSY PRIVET
1064	HOLLY OAK
1065	HOLLY OAK
1066	HOLLY OAK
1067	MEXICAN FAN PALM
1068	TOYON
1069	MEXICAN FAN PALM
1070	HOLLY OAK
1071	HOLLY OAK
1072	HOLLY OAK
1073	HOLLY OAK
1074	HOLLY OAK
1075	HOLLY OAK
1076	HOLLY OAK
1077	ELDERBERRY
1078	ITALIAN BUCKTHORN
1079	ITALIAN BUCKTHORN
1080	FIRETHORN
1081	LOLLYPOP TREE
1082	LOLLYPOP TREE
1083	LOLLYPOP TREE
1084	BLACK ACACIA
1085	HOPSEED
1086	LOLLYPOP TREE
1087	RED WILLOW
1088	BLACK WALNUT
1089	BAY
1090	CYPRESS
1091	RED WILLOW
1092	RED WILLOW
1093	RED WILLOW
1094	PINE
1095	PINE
1096	PINE
1097	PINE
1098	OAK
1099	PEPPER

TREE TABLE

NO.	DESCRIPTION
1100	UNKNOWN
1101	UNKNOWN
1102	UNKNOWN
1103	UNKNOWN
1104	UNKNOWN
1105	PEPPER
1106	PEPPER
1107	UNKNOWN
1108	UNKNOWN
1109	UNKNOWN
1110	PEPPER
1111	PINE
1112	PINE
1113	UNKNOWN
1114	PINE
1115	PINE
1116	UNKNOWN
1117	PINE
1118	UNKNOWN
1119	PEPPER
1120	TOYON
1121	UNKNOWN
1122	PINE
1123	UNKNOWN
1124	UNKNOWN
1125	PINE
1126	PINE
1127	TOYON
1128	PINE
1129	TOYON
1130	PINE
1131	TOYON
1132	PINE
1133	PINE
1134	PEPPER
1135	TOYON
1136	PEPPER
1137	PINE
1138	TOYON
1139	TOYON
1140	UNKNOWN
1141	PEPPER
1142	PINE
1143	UNKNOWN
1144	TOYON
1145	PINE
1146	TOYON
1147	UNKNOWN
1148	PINE
1149	TOYON

TREE TABLE

NO.	DESCRIPTION
1150	TOYON
1151	PINE
1152	UNKNOWN
1153	PEPPER
1154	PINE
1155	TOYON
1156	PEPPER
1157	UNKNOWN
1158	TOYON
1159	PEPPER
1160	PINE
1161	TOYON
1162	TOYON
1163	PINE
1164	TOYON
1165	UNKNOWN
1166	PEPPER
1167	OAK
1168	TOYON
1169	PEPPER
1170	TOYON
1171	PINE
1172	OAK
1173	PINE
1174	PINE
1175	PINE
1176	OAK
1177	OAK
1178	PALM
1179	PINE
1180	PINE
1181	PALM
1182	PALM
1183	UNKNOWN
1184	UNKNOWN
1185	OAK
1186	UNKNOWN
1187	UNKNOWN
1188	UNKNOWN
1189	UNKNOWN
1190	PINE
1191	UNKNOWN
1192	TOYON
1193	UNKNOWN
1194	PINE
1195	TOYON
1196	UNKNOWN
1197	UNKNOWN
1198	TOYON
1199	TOYON

TREE TABLE

NO.	DESCRIPTION
1200	TOYON
1201	PINE
1202	TOYON
1203	PINE
1204	UNKNOWN
1205	PEPPER
1206	TOYON
1207	PEPPER
1208	UNKNOWN
1209	PINE
1210	PINE
1211	PINE
1212	PINE
1213	PINE
1214	TOYON
1215	PINE
1216	TOYON
1217	OAK
1218	PEPPER
1219	TOYON
1220	OAK
1221	PINE
1222	UNKNOWN
1223	TOYON
1224	PINE
1225	TOYON
1226	PINE
1227	PINE
1228	PINE
1229	PINE
1230	TOYON
1231	PINE
1232	UNKNOWN
1233	PINE
1234	PEPPER
1235	UNKNOWN
1236	PINE
1237	PEPPER
1238	TOYON
1239	PEPPER
1240	TOYON
1241	PINE
1242	TOYON
1243	PEPPER
1244	PEPPER
1245	TOYON

USERNAME: jennford Wed 06 Jul 2011 08:18am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\D-09

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

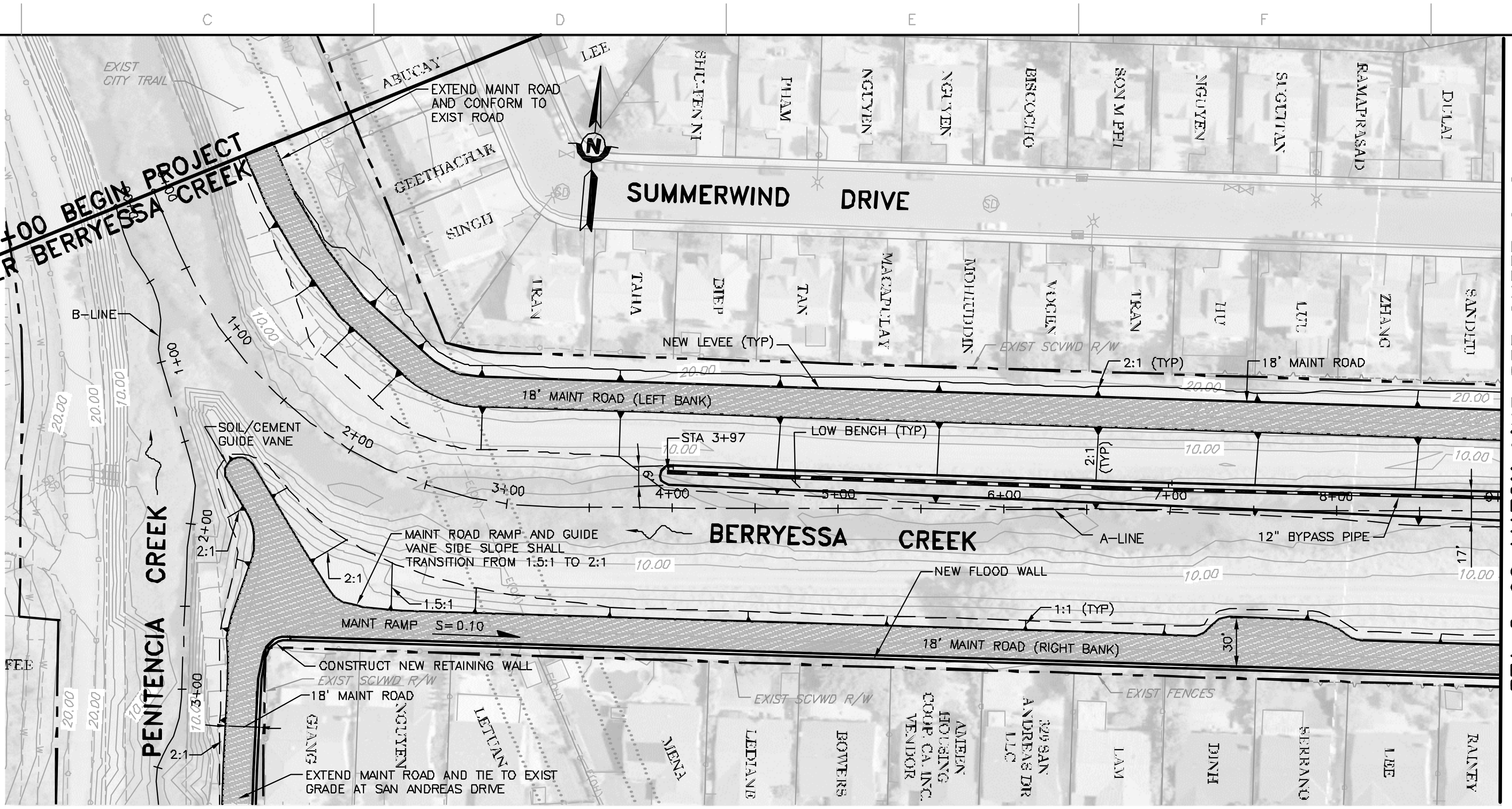
LOWER BERRYESSA CREEK PROJECT

TREE TABLE

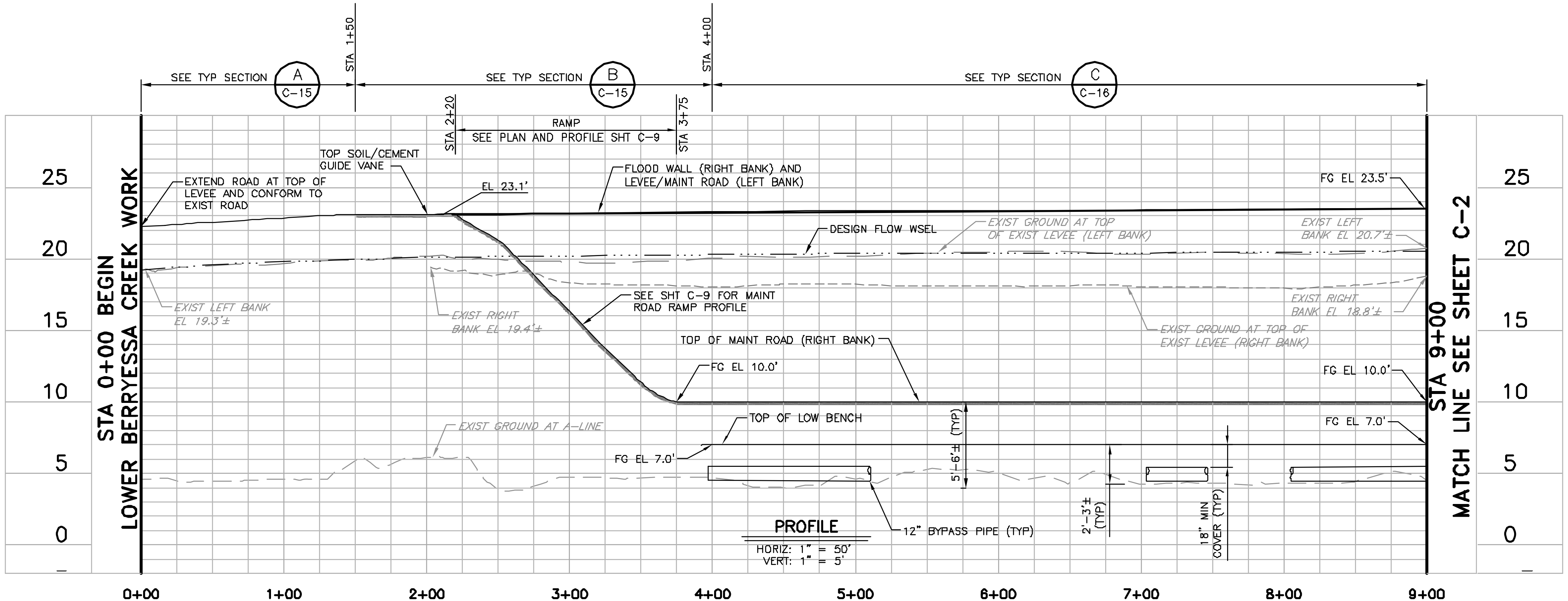
SCALE
NOT TO SCALE
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
D-9
SHEET NUMBER:
24 OF 76

USERNAME: jennford Wed 06 Jul 2011 08:20am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\C-D1



PLAN
SCALE 1" = 50'


SEE TYP SECTION A C-15
STA 1+50
SEE TYP SECTION B C-15
STA 4+00
SEE TYP SECTION C C-16
STA 2+20
RAMP
SEE PLAN AND PROFILE SHT C-9
STA 3+75
ELEVATION IN FEET
STA 0+00 BEGIN LOWER BERRYESSA CREEK WORK
EXTEND ROAD AT TOP OF LEVEE AND CONFORM TO EXIST ROAD
TOP SOIL/CEMENT GUIDE VANE
EL 23.1'
FLOOD WALL (RIGHT BANK) AND LEVEE/MAINT ROAD (LEFT BANK)
FG EL 23.5'
DESIGN FLOW WSEL
EXIST GROUND AT TOP OF EXIST LEVEE (LEFT BANK)
EXIST LEFT BANK EL 20.7'±
EXIST LEFT BANK EL 19.3'±
EXIST RIGHT BANK EL 19.4'±
SEE SHT C-9 FOR MAINT ROAD RAMP PROFILE
EXIST RIGHT BANK EL 18.8'±
EXIST GROUND AT TOP OF EXIST LEVEE (RIGHT BANK)
TOP OF MAINT ROAD (RIGHT BANK)
FG EL 10.0'
FG EL 10.0'
EXIST GROUND AT A-LINE
TOP OF LOW BENCH
FG EL 7.0'
FG EL 7.0'
5'-6'± (TYP)
2'-3'± (TYP)
18" MIN COVER (TYP)
12" BYPASS PIPE (TYP)
PROFILE
HORIZ: 1" = 50'
VERT: 1" = 5'
STA 9+00 MATCH LINE SEE SHEET C-2
0
5
10
15
20
25
0+00
1+00
2+00
3+00
4+00
5+00
6+00
7+00
8+00
9+00

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

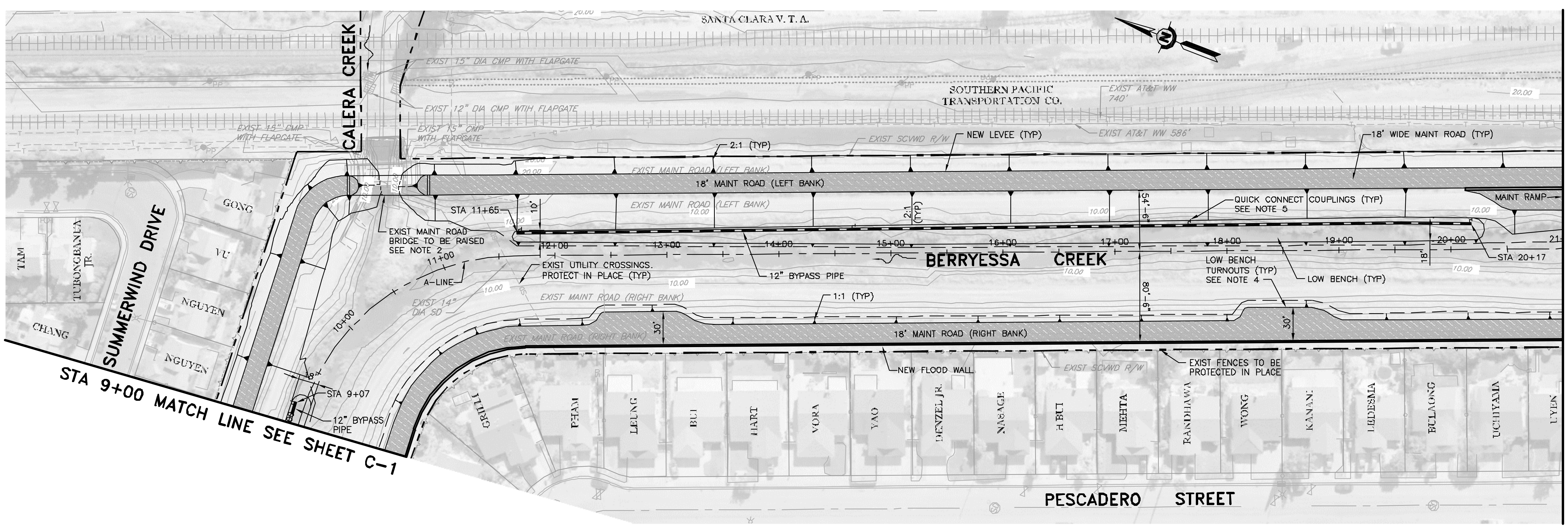
LOWER BERRYESSA CREEK PROJECT

PLAN AND PROFILE
STA 0+00 TO STA 9+00 (A-LINE)

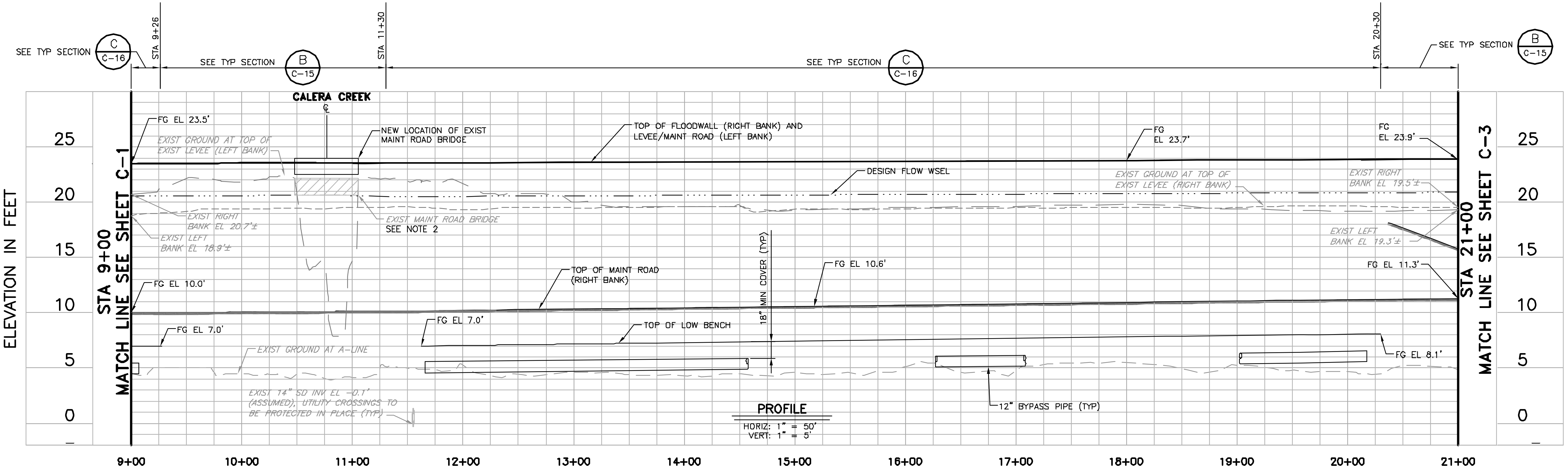
SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
C-1
SHEET NUMBER:
25 OF 76

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX



PLAN
SCALE 1" = 50'



PROFILE
HORIZ: 1" = 50'
VERT: 1" = 5'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. EXIST BR TO BE REMOVED AND STORED UNTIL NEW LEVEE AND NEW ABUTMENTS ARE CONSTRUCTED THEN PLACED BACK ON NEW ABUTMENTS.
3. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.
4. CONSTRUCT 70' LONG x 30' WIDE TURNOUTS SPACED APPROX EVERY 500'.
5. QUICK CONNECT COUPLINGS SPACED AT 300'±

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER
DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

PLAN AND PROFILE
STA 9+00 TO STA 21+00 (A-LINE)

SCALE
AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

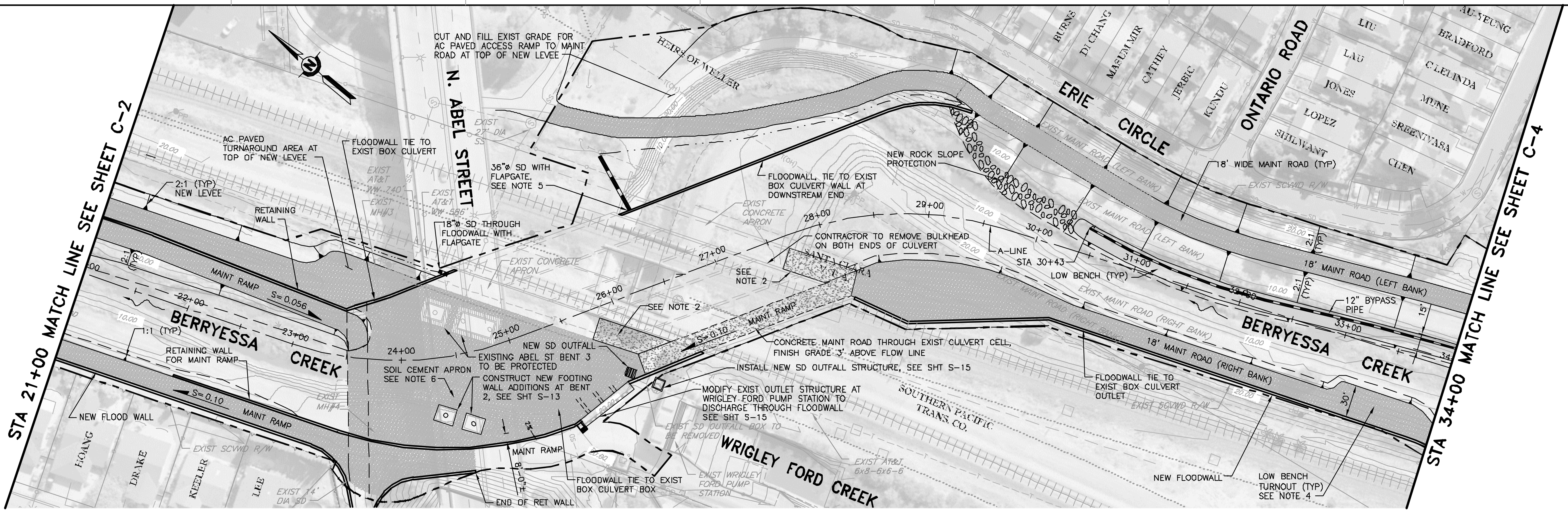
PROJECT NUMBER
40174004

SHEET CODE:
C-2

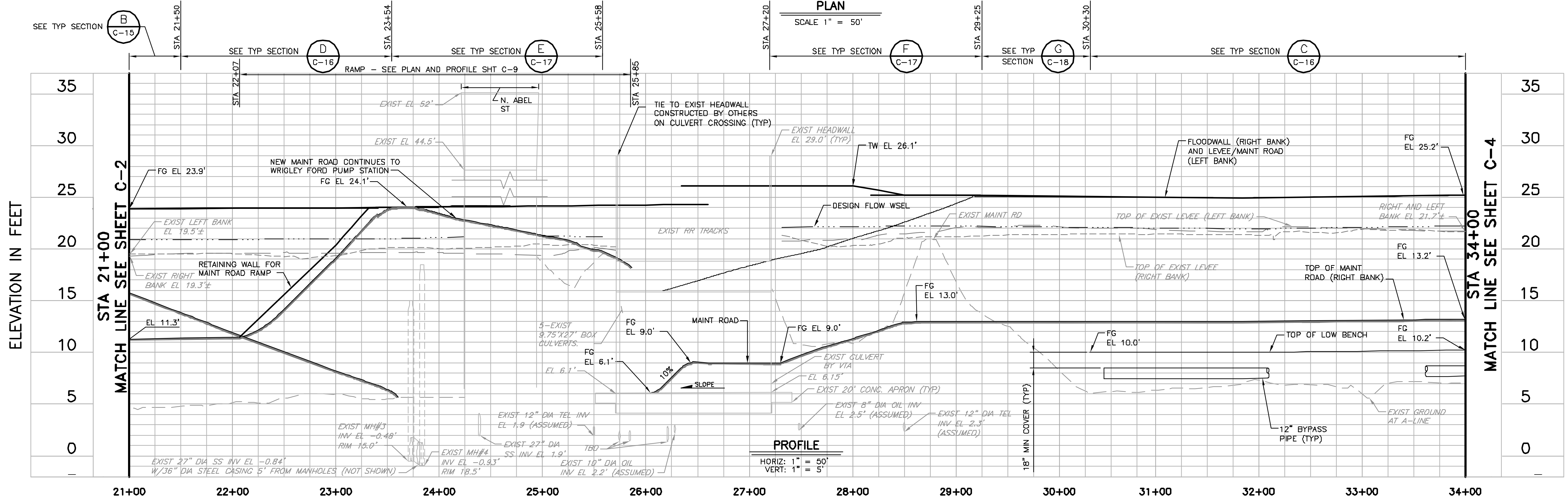
SHEET NUMBER:
26 OF 76

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 08:23am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\C-02


STA 21+00 MATCH LINE SEE SHEET C-2
STA 34+00 MATCH LINE SEE SHEET C-4
N
N. ABEL STREET
CUT AND FILL EXIST GRADE FOR AC PAVED ACCESS RAMP TO MAINT ROAD AT TOP OF NEW LEVEE
AC PAVED TURNAROUND AREA AT TOP OF NEW LEVEE
FLOODWALL TIE TO EXIST BOX CULVERT
36"Ø SD WITH FLAPGATE, SEE NOTE 5
18"Ø SD THROUGH FLOODWALL WITH FLAPGATE
2:1 (TYP) NEW LEVEE
RETAINING WALL
MAINT RAMP
S= 0.056
BERRYESSA CREEK
1:1 (TYP)
RETAINING WALL FOR MAINT RAMP
S= 0.10
NEW FLOOD WALL
24+00
SOIL CEMENT APRON SEE NOTE 6
EXISTING ABEL ST BENT 3 TO BE PROTECTED
CONSTRUCT NEW FOOTING WALL ADDITIONS AT BENT 2, SEE SHT S-13
NEW SD OUTFALL
SEE NOTE 2
MAINT RAMP
END OF RET WALL
FLOODWALL TIE TO EXIST BOX CULVERT BOX
CONCRETE MAINT ROAD THROUGH EXIST CULVERT CELL, FINISH GRADE 3' ABOVE FLOW LINE
INSTALL NEW SD OUTFALL STRUCTURE, SEE SHT S-15
MODIFY EXIST OUTLET STRUCTURE AT WRIGLEY FORD PUMP STATION TO DISCHARGE THROUGH FLOODWALL SEE SHT S-15
WRIGLEY FORD CREEK
SOUTHERN PACIFIC TRANS. CO.
HEIRS OF WELLER
FLOODWALL, TIE TO EXIST BOX CULVERT WALL AT DOWNSTREAM END
CONTRACTOR TO REMOVE BULKHEAD ON BOTH ENDS OF CULVERT
NEW ROCK SLOPE PROTECTION
A-LINE STA 30+43
LOW BENCH (TYP)
ERIE CIRCLE
ONTARIO ROAD
18' WIDE MAINT ROAD (TYP)
18' MAINT ROAD (LEFT BANK)
18' MAINT ROAD (RIGHT BANK)
12" BYPASS PIPE
FLOODWALL TIE TO EXIST BOX CULVERT OUTLET
NEW FLOODWALL
LOW BENCH TURNOUT (TYP) SEE NOTE 4
HOANG
DRAKE
KEELER
LEE
BURNS
DI CHANG
MASUM MIR
CATHEY
JERBIC
KUNDU
LIU
LAU
JONES
LOPEZ
SHILWANT
CHEN
AU-YEUNG
BRADFORD
C LELINDA
MUNE
SREENIVASA
25+00
26+00
27+00
28+00
29+00
30+00
31+00
33+00
15'
30'

PLAN
SCALE 1" = 50'


SEE TYP SECTION B C-15
STA 21+50
SEE TYP SECTION D C-16
STA 22+07
RAMP - SEE PLAN AND PROFILE SHT C-9
STA 23+54
SEE TYP SECTION E C-17
STA 25+58
STA 25+85
STA 27+20
SEE TYP SECTION F C-17
STA 29+25
SEE TYP SECTION G C-18
STA 30+30
SEE TYP SECTION C C-16
ELEVATION IN FEET
35
30
25
20
15
10
5
0
STA 21+00 MATCH LINE SEE SHEET C-2
STA 34+00 MATCH LINE SEE SHEET C-4
FG EL 23.9'
EXIST LEFT BANK EL 19.5'±
EXIST RIGHT BANK EL 19.3'±
RETAINING WALL FOR MAINT ROAD RAMP
EL 11.3'
NEW MAINT ROAD CONTINUES TO WRIGLEY FORD PUMP STATION
FG EL 24.1'
EXIST EL 52'
EXIST EL 44.5'
N. ABEL ST
TIE TO EXIST HEADWALL CONSTRUCTED BY OTHERS ON CULVERT CROSSING (TYP)
EXIST HEADWALL EL 29.0' (TYP)
TW EL 26.1'
DESIGN FLOW WSEL
EXIST RR TRACKS
EXIST MAINT RD
TOP OF EXIST LEVEE (LEFT BANK)
TOP OF EXIST LEVEE (RIGHT BANK)
FLOODWALL (RIGHT BANK) AND LEVEE/MAINT ROAD (LEFT BANK)
FG EL 25.2'
RIGHT AND LEFT BANK EL 21.7'±
FG EL 13.2'
TOP OF MAINT ROAD (RIGHT BANK)
FG EL 13.0'
FG EL 10.0'
TOP OF LOW BENCH
FG EL 10.2'
5-EXIST 9.75'X27' BOX CULVERTS
FG EL 9.0'
MAINT ROAD
FG EL 9.0'
FG EL 6.1'
EL 6.1'
10%
SLOPE
EXIST CULVERT BY VIA
EL 6.15'
EXIST 20' CONC. APRON (TYP)
EXIST 8" DIA OIL INV EL 2.5' (ASSUMED)
EXIST 12" DIA TEL INV EL 2.3' (ASSUMED)
18" MIN COVER (TYP)
12" BYPASS PIPE (TYP)
EXIST GROUND AT A-LINE
EXIST MH#3 INV EL -0.48' RIM 15.0'
EXIST 12" DIA TEL INV EL 1.9 (ASSUMED)
EXIST 27" DIA SS INV EL 1.9'
TBD
EXIST MH#4 INV EL -0.93' RIM 18.5'
EXIST 10" DIA OIL INV EL 2.2' (ASSUMED)
EXIST 27" DIA SS INV EL -0.84' W/36" DIA STEEL CASING 5' FROM MANHOLES (NOT SHOWN)
21+00
22+00
23+00
24+00
25+00
26+00
27+00
28+00
29+00
30+00
31+00
32+00
33+00
34+00

PROFILE
HORIZ: 1" = 50'
VERT: 1" = 5'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. EXTEND CONCRETE APRON FOR FULL LENGTH OF CULVERTS.
3. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.
4. CONSTRUCT 70' LONG x 30' WIDE TURNOUTS SPACED APPROX EVERY 500'.
5. 36"Ø SD THROUGH FLOODWALL WITH FLAPGATE.
6. 12" SOIL CEMENT APRON AT BOX CULVERT OUTLET.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION

REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

PLAN AND PROFILE
STA 21+00 TO STA 34+00 (A-LINE)

SCALE
AS SHOWN

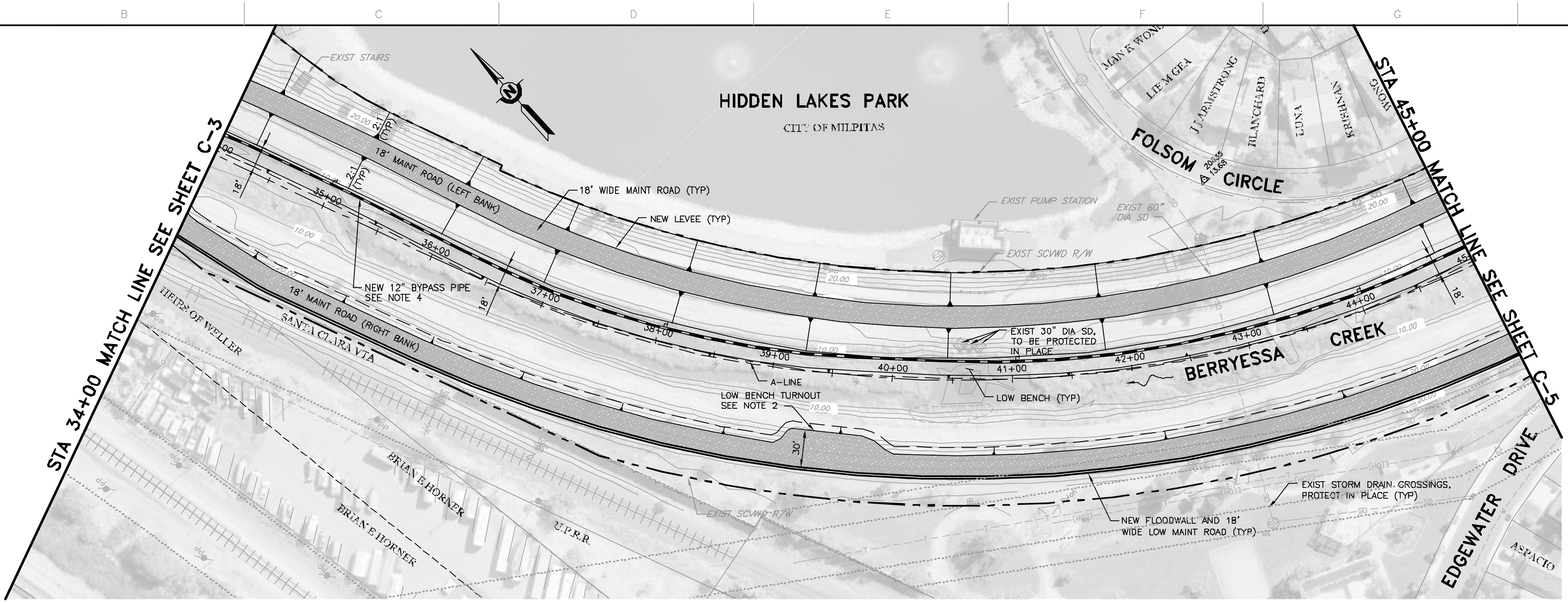
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

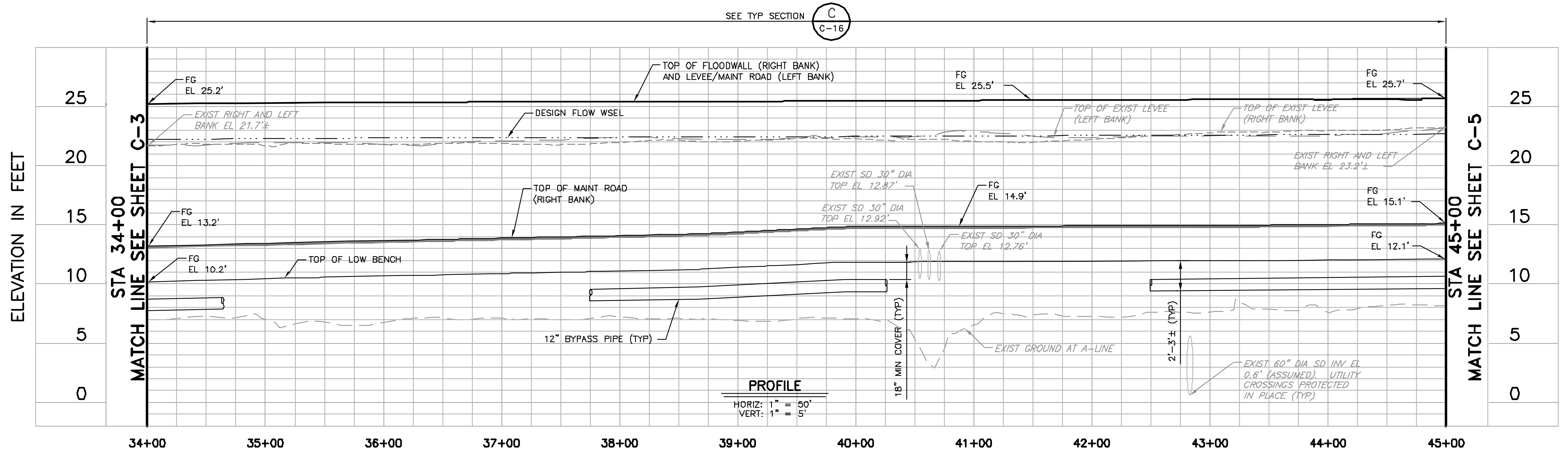
SHEET CODE:
C-3

SHEET NUMBER:
27 OF 76

USERNAME: jennford Wed 06 Jul 2011 08:29am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\C-04


HIDDEN LAKES PARK
CITY OF MILPITAS
EXIST STAIRS
STA 34+00 MATCH LINE SEE SHEET C-3
STA 45+00 MATCH LINE SEE SHEET C-5
FOLSOM CIRCLE
EDGEWATER DRIVE
BERRYESSA CREEK
18' WIDE MAINT ROAD (TYP)
NEW LEVEE (TYP)
18' MAINT ROAD (LEFT BANK)
18' MAINT ROAD (RIGHT BANK)
NEW 12" BYPASS PIPE SEE NOTE 4
EXIST PUMP STATION
EXIST SCVWD R/W
EXIST 60" DIA SD
EXIST 30" DIA SD, TO BE PROTECTED IN PLACE
A-LINE
LOW BENCH TURNOUT SEE NOTE 2
LOW BENCH (TYP)
EXIST STORM DRAIN CROSSINGS, PROTECT IN PLACE (TYP)
NEW FLOODWALL AND 18' WIDE LOW MAINT ROAD (TYP)
SANTA CLARA VTA
HEIRS OF WELLER
BRIAN E HORNER
U.P.R.R.
35+00
36+00
37+00
38+00
39+00
40+00
41+00
42+00
43+00
44+00
18'
30'
2:1 (TYP)

PLAN
SCALE 1" = 50'


SEE TYP SECTION C C-16
ELEVATION IN FEET
STA 34+00 MATCH LINE SEE SHEET C-3
STA 45+00 MATCH LINE SEE SHEET C-5
FG EL 25.2'
TOP OF FLOODWALL (RIGHT BANK) AND LEVEE/MAINT ROAD (LEFT BANK)
FG EL 25.5'
FG EL 25.7'
EXIST RIGHT AND LEFT BANK EL 21.7'±
DESIGN FLOW WSEL
TOP OF EXIST LEVEE (LEFT BANK)
TOP OF EXIST LEVEE (RIGHT BANK)
EXIST RIGHT AND LEFT BANK EL 23.2'±
TOP OF MAINT ROAD (RIGHT BANK)
FG EL 13.2'
EXIST SD 30" DIA TOP EL 12.87'
EXIST SD 30" DIA TOP EL 12.92'
FG EL 14.9'
EXIST SD 30" DIA TOP EL 12.76'
FG EL 15.1'
FG EL 12.1'
FG EL 10.2'
TOP OF LOW BENCH
12" BYPASS PIPE (TYP)
18" MIN COVER (TYP)
EXIST GROUND AT A-LINE
2'-3'± (TYP)
EXIST 60" DIA SD INV EL 0.6' (ASSUMED), UTILITY CROSSINGS PROTECTED IN PLACE (TYP)
0
5
10
15
20
25
34+00
35+00
36+00
37+00
38+00
39+00
40+00
41+00
42+00
43+00
44+00
45+00

PROFILE
HORIZ: 1" = 50'
VERT: 1" = 5'

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. CONSTRUCT 70' LONG x 30' WIDE TURNOUTS SPACED APPROX EVERY 500'.
3. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.
4. 12" BYPASS PIPE EQUIPPED WITH QUICK COUPLING SPACED AT 300'±.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER
DATE

Santa Clara Valley Water District

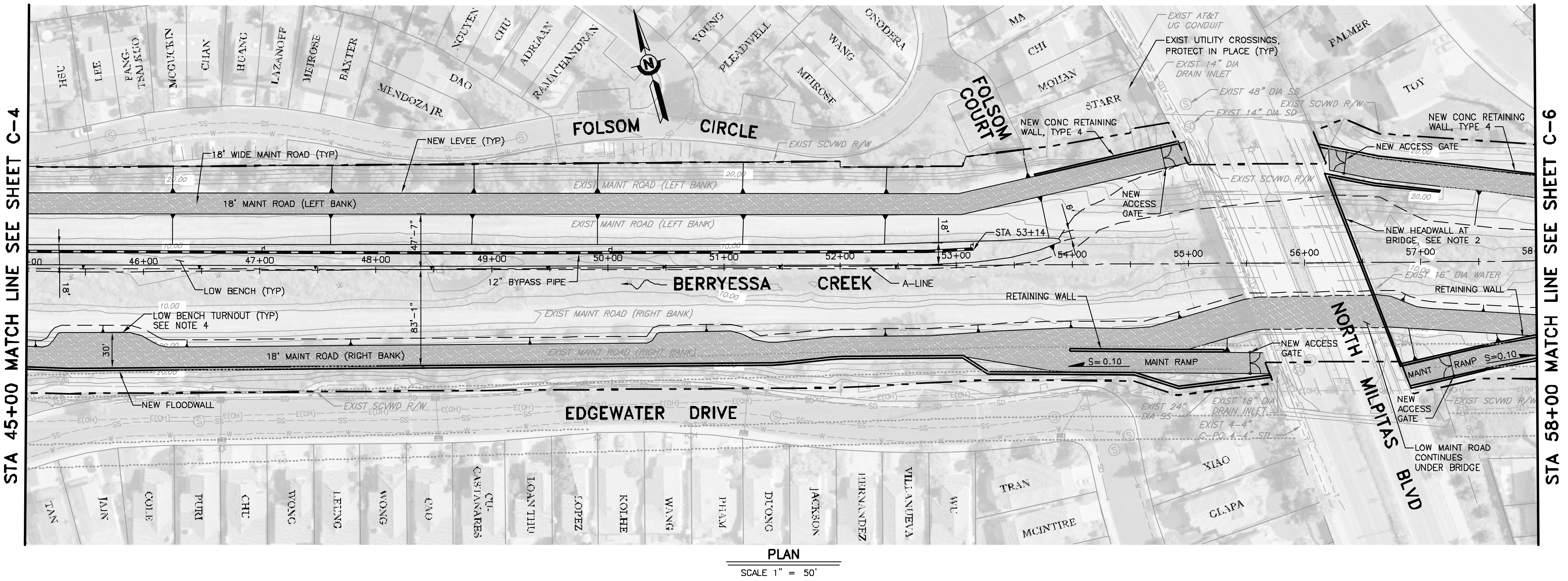
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

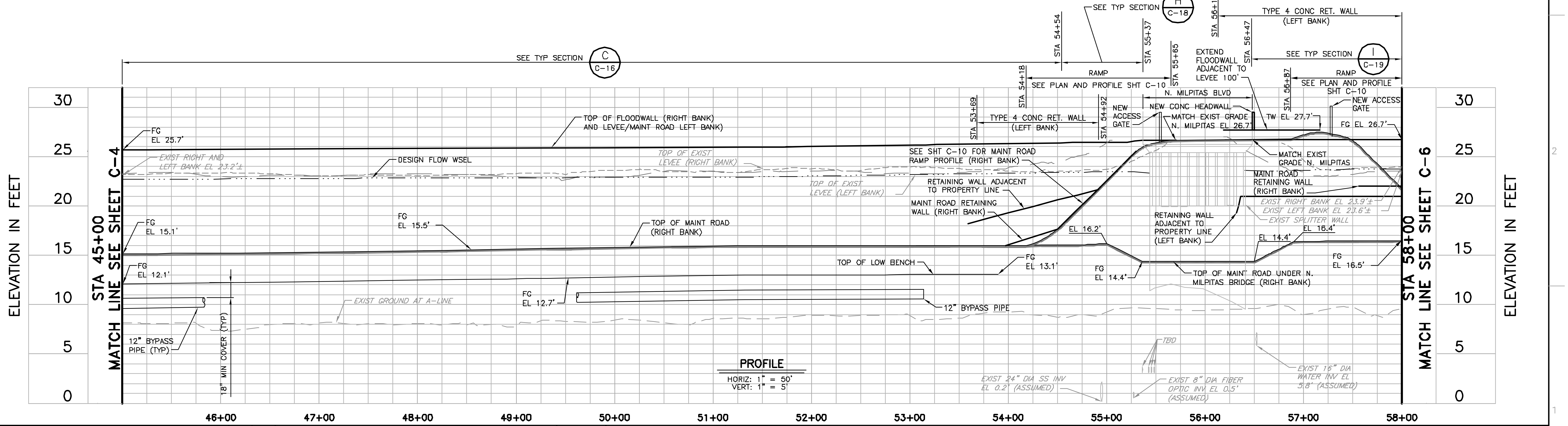
PLAN AND PROFILE
STA 34+00 TO STA 45+00 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
C-4
SHEET NUMBER:
28 OF 76



PLAN
SCALE 1" = 50'


ELEVATION IN FEET
0
5
10
15
20
25
30
STA 45+00 MATCH LINE SEE SHEET C-4
STA 58+00 MATCH LINE SEE SHEET C-6
SEE TYP SECTION C C-16
SEE TYP SECTION H C-18
SEE TYP SECTION I C-19
FG EL 25.7'
EXIST RIGHT AND LEFT BANK EL 23.2'±
TOP OF FLOODWALL (RIGHT BANK) AND LEVEE/MAINT ROAD LEFT BANK)
DESIGN FLOW WSEL
TOP OF EXIST LEVEE (RIGHT BANK)
TOP OF EXIST LEVEE (LEFT BANK)
FG EL 15.1'
FG EL 15.5'
TOP OF MAINT ROAD (RIGHT BANK)
FG EL 12.1'
FG EL 12.7'
TOP OF LOW BENCH
12" BYPASS PIPE
12" BYPASS PIPE (TYP)
18" MIN COVER (TYP)
EXIST GROUND AT A-LINE
STA 53+69
STA 54+18
STA 54+54
STA 54+92
STA 55+37
STA 55+65
STA 56+13
STA 56+47
STA 56+87
TYPE 4 CONC RET. WALL (LEFT BANK)
RAMP
SEE PLAN AND PROFILE SHT C-10
N. MILPITAS BLVD
NEW ACCESS GATE
NEW CONC HEADWALL
MATCH EXIST GRADE N. MILPITAS EL 26.7'
EXTEND FLOODWALL ADJACENT TO LEVEE 100'
TW EL 27.7'
FG EL 26.7'
SEE SHT C-10 FOR MAINT ROAD RAMP PROFILE (RIGHT BANK)
RETAINING WALL ADJACENT TO PROPERTY LINE
MAINT ROAD RETAINING WALL (RIGHT BANK)
EL 16.2'
FG EL 13.1'
FG EL 14.4'
RETAINING WALL ADJACENT TO PROPERTY LINE (LEFT BANK)
TOP OF MAINT ROAD UNDER N. MILPITAS BRIDGE (RIGHT BANK)
MATCH EXIST GRADE N. MILPITAS
EXIST RIGHT BANK EL 23.9'±
EXIST LEFT BANK EL 23.6'±
EXIST SPLITTER WALL
EL 14.4'
EL 16.4'
FG EL 16.5'
TBD
EXIST 24" DIA SS INV EL 0.2' (ASSUMED)
EXIST 8" DIA FIBER OPTIC INV EL 0.5' (ASSUMED)
EXIST 16" DIA WATER INV EL 5.8' (ASSUMED)
46+00
47+00
48+00
49+00
50+00
51+00
52+00
53+00
54+00
55+00
56+00
57+00
58+00

PROFILE
HORIZ: 1" = 50'
VERT: 1" = 5'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. CONSTRUCT HEADWALL ON UPSTREAM FACE OF NORTH MILPITAS BRIDGE.
3. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.
4. CONSTRUCT 70' LONG x 30' WIDE TURNOUTS SPACED APPROX EVERY 500'.

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

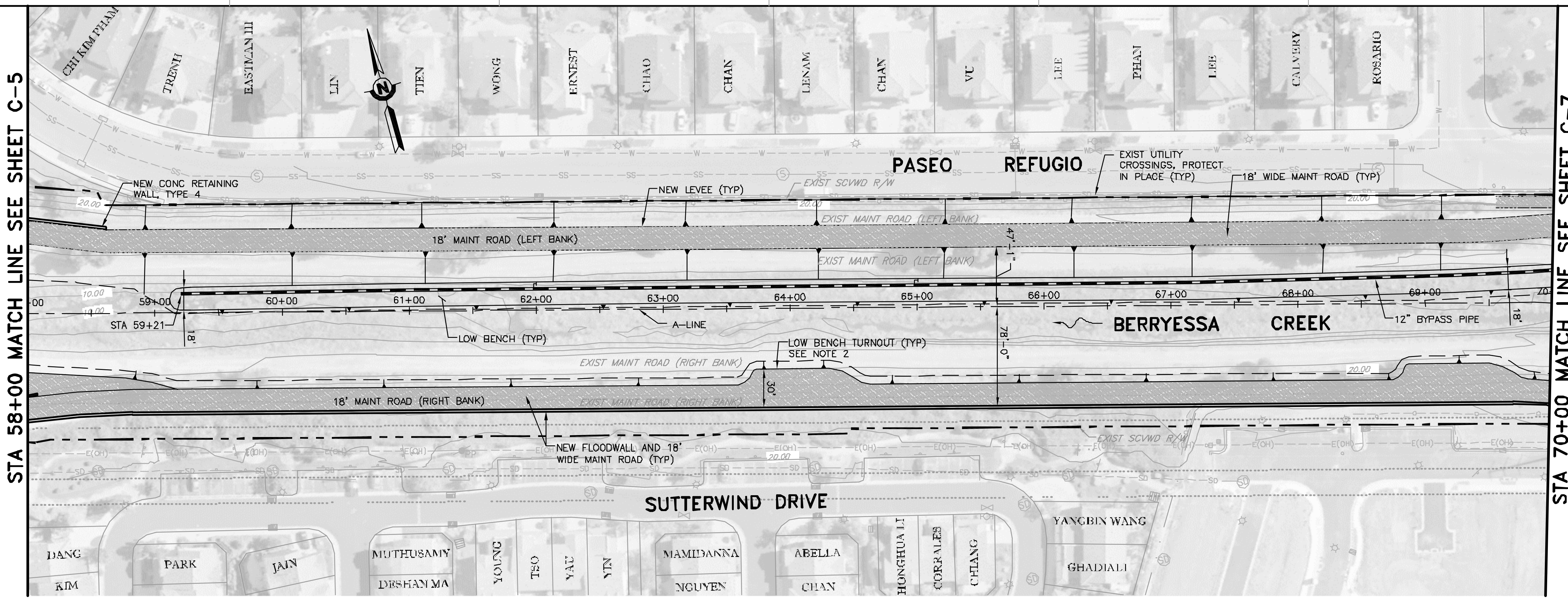
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

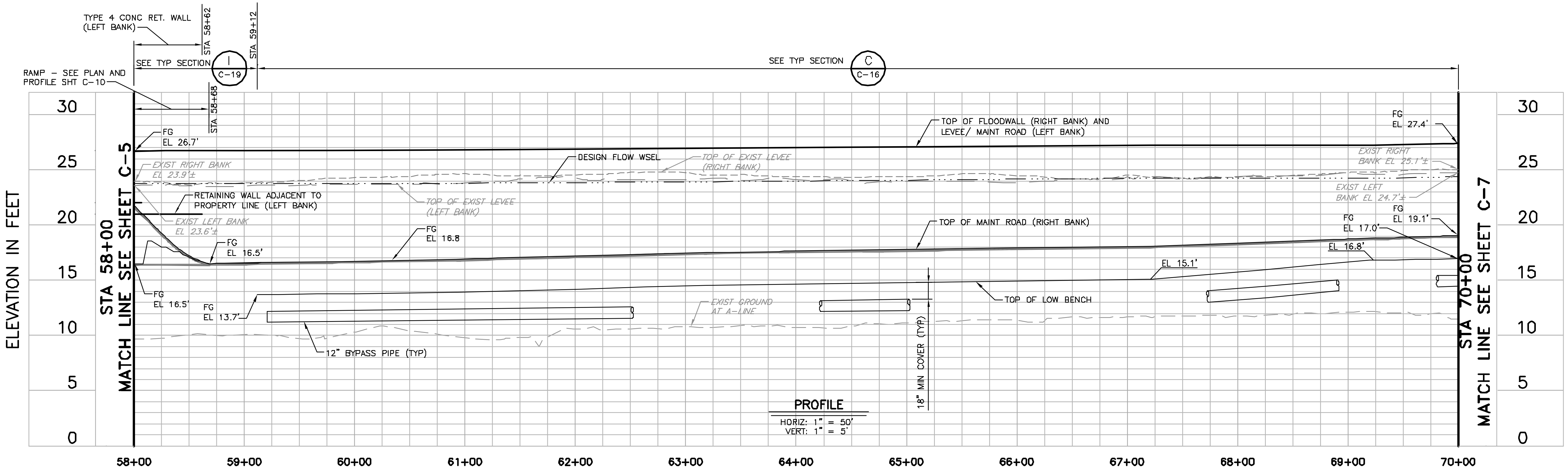
PLAN AND PROFILE
STA 45+00 TO STA 58+00 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
C-5
SHEET NUMBER:
29 OF 76



PLAN
SCALE 1" = 50'


TYPE 4 CONC RET. WALL (LEFT BANK)
STA 58+62
STA 59+12
RAMP - SEE PLAN AND PROFILE SHT C-10
SEE TYP SECTION
I C-19
STA 58+68
SEE TYP SECTION
C C-16
ELEVATION IN FEET
30
25
20
15
10
5
0
STA 58+00 MATCH LINE SEE SHEET C-5
STA 70+00 MATCH LINE SEE SHEET C-7
FG EL 26.7'
EXIST RIGHT BANK EL 23.9'±
RETAINING WALL ADJACENT TO PROPERTY LINE (LEFT BANK)
EXIST LEFT BANK EL 23.6'±
FG EL 16.5'
FG EL 16.5'
FG EL 13.7'
FG EL 16.8
DESIGN FLOW WSEL
TOP OF EXIST LEVEE (RIGHT BANK)
TOP OF EXIST LEVEE (LEFT BANK)
TOP OF FLOODWALL (RIGHT BANK) AND LEVEE/ MAINT ROAD (LEFT BANK)
TOP OF MAINT ROAD (RIGHT BANK)
EXIST GROUND AT A-LINE
12" BYPASS PIPE (TYP)
18" MIN COVER (TYP)
EL 15.1'
TOP OF LOW BENCH
FG EL 27.4'
EXIST RIGHT BANK EL 25.1'±
EXIST LEFT BANK EL 24.7'±
FG EL 19.1'
FG EL 17.0'
EL 16.8'
58+00
59+00
60+00
61+00
62+00
63+00
64+00
65+00
66+00
67+00
68+00
69+00
70+00

PROFILE
HORIZ: 1" = 50'
VERT: 1" = 5'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. CONSTRUCT 70' LONG x 30' WIDE TURNOUTS SPACED APPROX EVERY 500'.
3. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.

DATE: JUNE 2011
DESIGN: B. TAN
DRAWN: J. FORD
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

PLAN AND PROFILE
STA 58+00 TO STA 70+00 (A-LINE)

SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: C-6
SHEET NUMBER: 30 OF 76

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 08:33am
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USERNAME: jennford Wed 06 Jul 2011 08:36am
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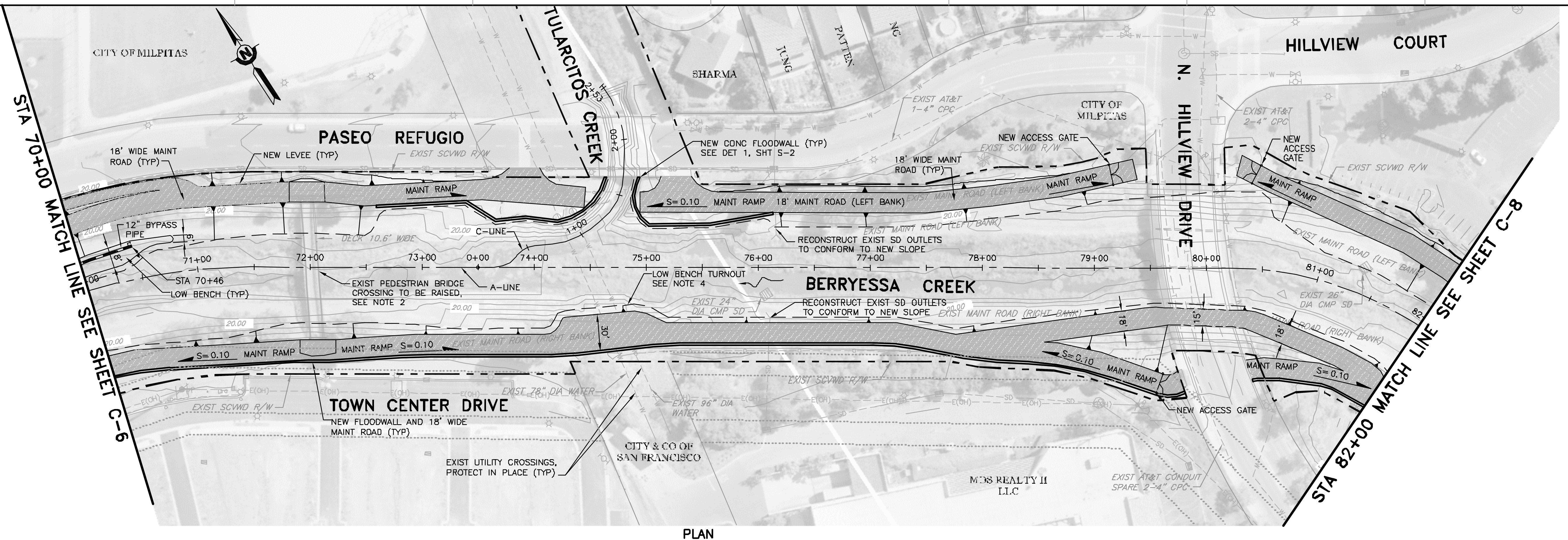
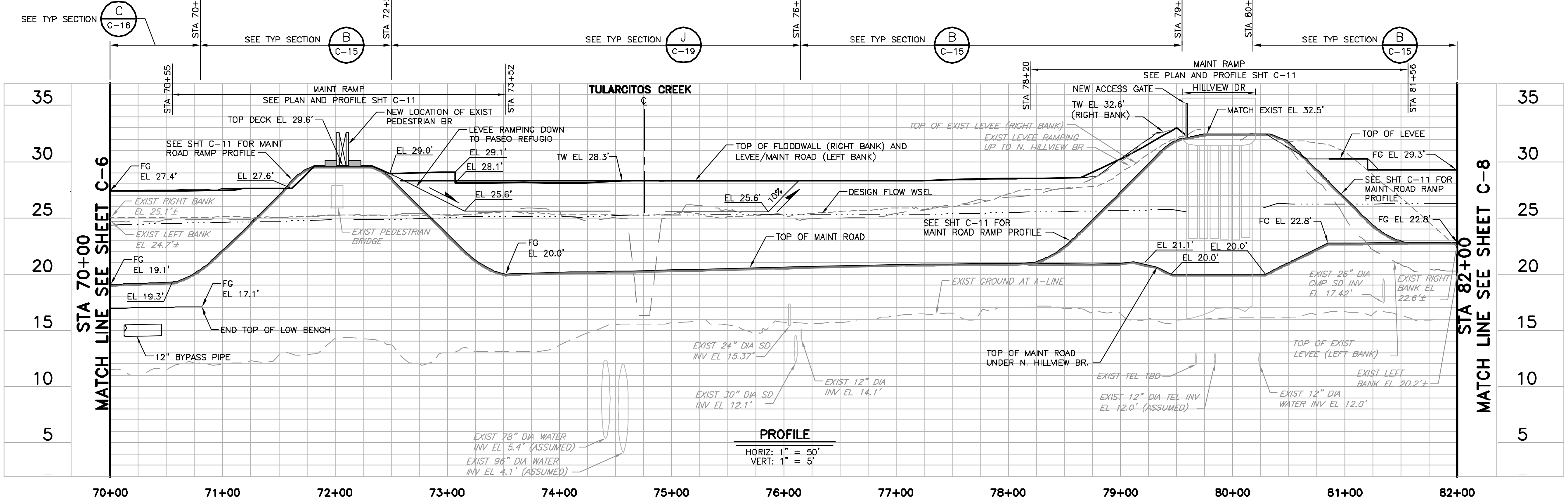

STA 70+00 MATCH LINE SEE SHEET C-6
CITY OF MILPITAS
PASEO REFUGIO
TULARCITOS CREEK
18' WIDE MAINT ROAD (TYP)
NEW LEVEE (TYP)
EXIST SCVWD R/W
MAINT RAMP
12" BYPASS PIPE
STA 70+46
LOW BENCH (TYP)
DECK 10.6' WIDE
C-LINE
A-LINE
EXIST PEDESTRIAN BRIDGE CROSSING TO BE RAISED, SEE NOTE 2
S=0.10
MAINT RAMP S=0.10
TOWN CENTER DRIVE
NEW FLOODWALL AND 18' WIDE MAINT ROAD (TYP)
EXIST UTILITY CROSSINGS, PROTECT IN PLACE (TYP)
EXIST 78" DIA WATER
EXIST 96" DIA WATER
CITY & CO OF SAN FRANCISCO
SHARMA
JUNG
PATTEN
NG
NEW CONC FLOODWALL (TYP) SEE DET 1, SHT S-2
18' MAINT ROAD (LEFT BANK)
RECONSTRUCT EXIST SD OUTLETS TO CONFORM TO NEW SLOPE
LOW BENCH TURNOUT SEE NOTE 4
BERRYESSA CREEK
EXIST 24" DIA CMP SD
EXIST MAINT ROAD (RIGHT BANK)
EXIST MAINT ROAD (LEFT BANK)
NEW ACCESS GATE
CITY OF MILPITAS
N. HILLVIEW DRIVE
HILLVIEW COURT
EXIST AT&T 1-4" CPC
EXIST AT&T 2-4" CPC
EXIST 26" DIA CMP SD
EXIST AT&T CONDUIT SPARE 2-4" CPC
MDS REALTY II LLC
STA 82+00 MATCH LINE SEE SHEET C-8

PLAN
SCALE 1" = 50'


SEE TYP SECTION C C-16
SEE TYP SECTION B C-15
SEE TYP SECTION J C-19
STA 70+55
STA 70+80
STA 72+50
STA 73+52
STA 76+15
STA 78+20
STA 79+55
STA 80+18
STA 81+56
MAINT RAMP SEE PLAN AND PROFILE SHT C-11
TULARCITOS CREEK
TOP DECK EL 29.6'
NEW LOCATION OF EXIST PEDESTRIAN BR
LEVEE RAMPING DOWN TO PASEO REFUGIO
SEE SHT C-11 FOR MAINT ROAD RAMP PROFILE
FG EL 27.4'
EL 27.6'
EL 29.0'
EL 29.1'
EL 28.1'
TW EL 28.3'
TOP OF FLOODWALL (RIGHT BANK) AND LEVEE/MAINT ROAD (LEFT BANK)
EL 25.6'
DESIGN FLOW WSEL
EXIST RIGHT BANK EL 25.1'±
EXIST LEFT BANK EL 24.7'±
EXIST PEDESTRIAN BRIDGE
FG EL 19.1'
EL 19.3'
FG EL 17.1'
END TOP OF LOW BENCH
12" BYPASS PIPE
FG EL 20.0'
TOP OF MAINT ROAD
EXIST GROUND AT A-LINE
EXIST 24" DIA SD INV EL 15.37'
EXIST 12" DIA INV EL 14.1'
EXIST 30" DIA SD INV EL 12.1'
EXIST 78" DIA WATER INV EL 5.4' (ASSUMED)
EXIST 96" DIA WATER INV EL 4.1' (ASSUMED)
NEW ACCESS GATE
HILLVIEW DR
TW EL 32.6' (RIGHT BANK)
MATCH EXIST EL 32.5'
TOP OF EXIST LEVEE (RIGHT BANK)
EXIST LEVEE RAMPING UP TO N. HILLVIEW BR
TOP OF LEVEE
FG EL 29.3'
SEE SHT C-11 FOR MAINT ROAD RAMP PROFILE
FG EL 22.8'
EL 21.1'
EL 20.0'
TOP OF MAINT ROAD UNDER N. HILLVIEW BR.
EXIST TEL TBD
EXIST 12" DIA TEL INV EL 12.0' (ASSUMED)
EXIST 12" DIA WATER INV EL 12.0'
EXIST 26" DIA CMP SD INV EL 17.42'
EXIST RIGHT BANK EL 22.6'±
TOP OF EXIST LEVEE (LEFT BANK)
EXIST LEFT BANK EL 20.2'±
STA 70+00 MATCH LINE SEE SHEET C-6
STA 82+00 MATCH LINE SEE SHEET C-8
ELEVATION IN FEET
35
30
25
20
15
10
5
70+00
71+00
72+00
73+00
74+00
75+00
76+00
77+00
78+00
79+00
80+00
81+00
82+00

PROFILE
HORIZ: 1" = 50'
VERT: 1" = 5'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. EXIST PEDESTRIAN BRIDGE TO BE REMOVED AND STORED UNTIL NEW LEVEE AND NEW ABUTMENTS ARE CONSTRUCTED THEN PLACED BACK ON NEW ABUTMENTS.
3. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.
4. CONSTRUCT 70' LONG x 30' WIDE TURNOUTS SPACED APPROX EVERY 500'.

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

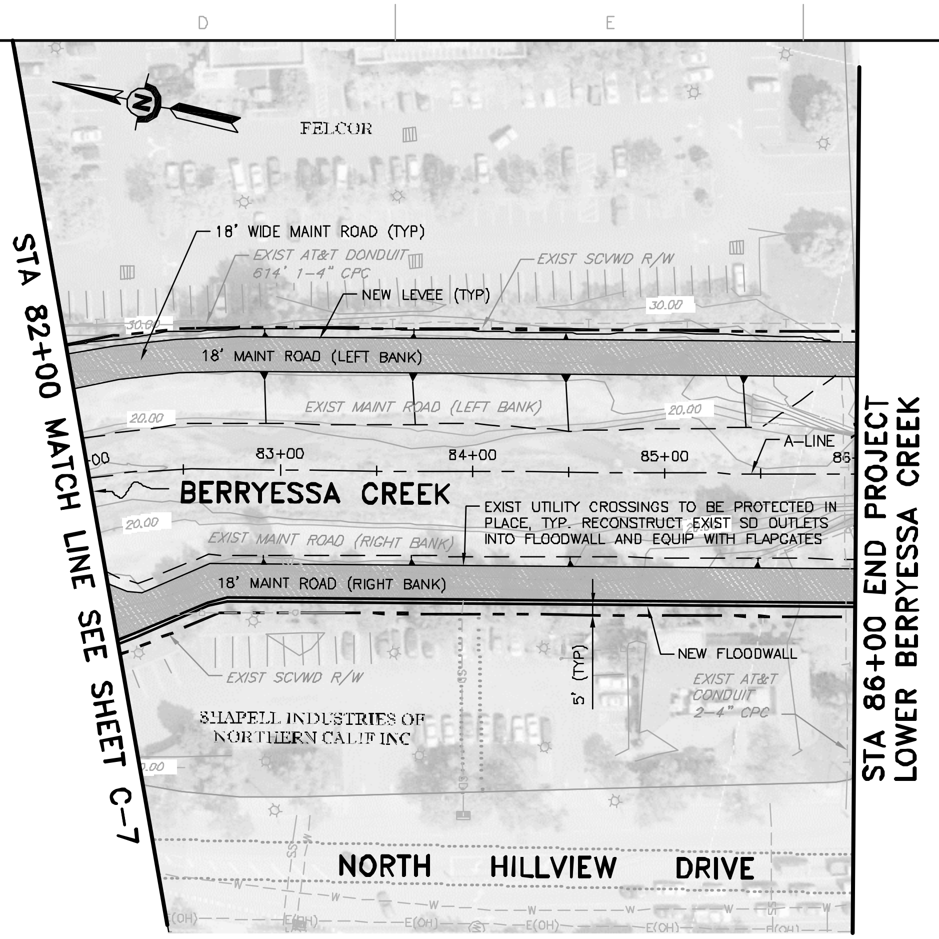
LOWER BERRYESSA CREEK PROJECT

PLAN AND PROFILE
STA 70+00 TO STA 82+00 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

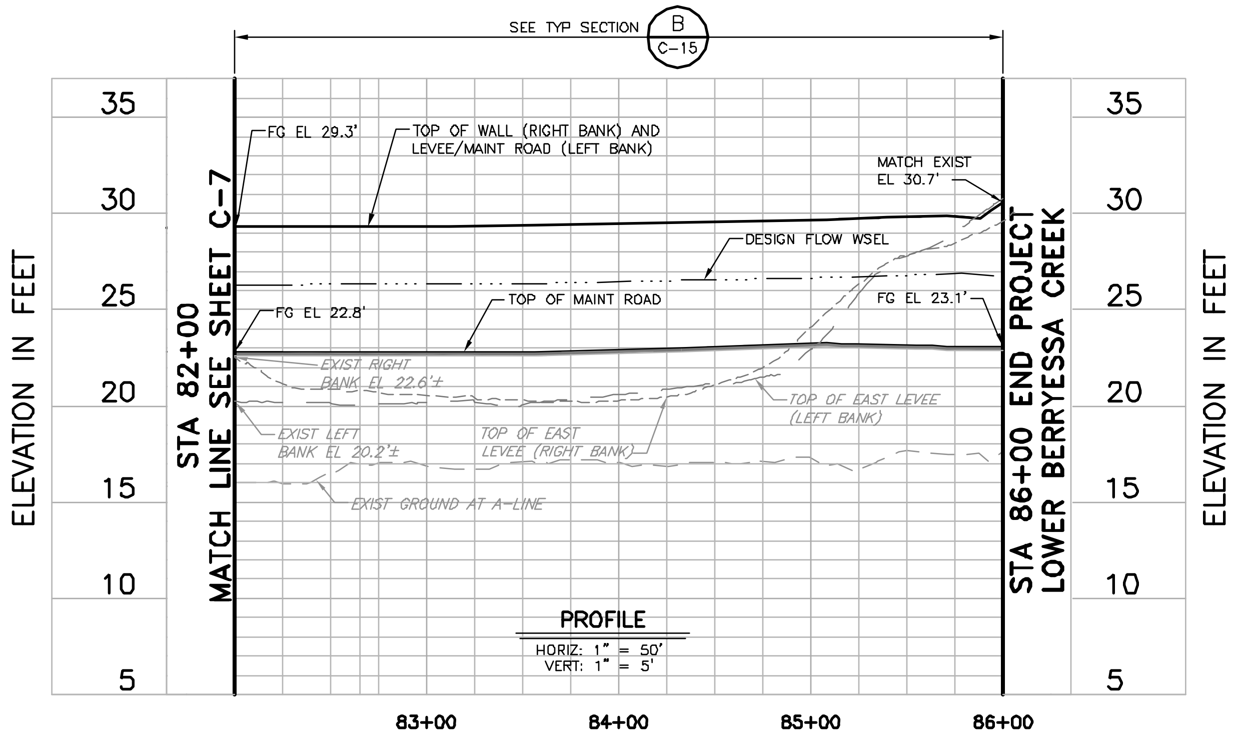
PROJECT NUMBER
40174004
SHEET CODE:
C-7
SHEET NUMBER:
31 OF 76

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX


FELCOR
STA 82+00 MATCH LINE SEE SHEET C-7
18' WIDE MAINT ROAD (TYP)
EXIST AT&T DONDUIT 614' 1-4" CPC
EXIST SCVWD R/W
NEW LEVEE (TYP)
30.00
18' MAINT ROAD (LEFT BANK)
EXIST MAINT ROAD (LEFT BANK)
20.00
A-LINE
83+00
84+00
85+00
86
BERRYESSA CREEK
EXIST UTILITY CROSSINGS TO BE PROTECTED IN PLACE, TYP. RECONSTRUCT EXIST SD OUTLETS INTO FLOODWALL AND EQUIP WITH FLAPGATES
EXIST MAINT ROAD (RIGHT BANK)
18' MAINT ROAD (RIGHT BANK)
NEW FLOODWALL
5' (TYP)
EXIST SCVWD R/W
EXIST AT&T CONDUIT 2-4" CPC
SHAPELL INDUSTRIES OF NORTHERN CALIF INC
NORTH HILLVIEW DRIVE
STA 86+00 END PROJECT LOWER BERRYESSA CREEK

PLAN

SCALE 1" = 50'



PROFILE

HORIZ: 1" = 50'
VERT: 1" = 5'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.

DATE: JUNE 2011
DESIGN: B. TAN
DRAWN: J. FORD
CHECKED: T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

PLAN AND PROFILE
STA 82+00 TO STA 86+00 (A-LINE)

SCALE: AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

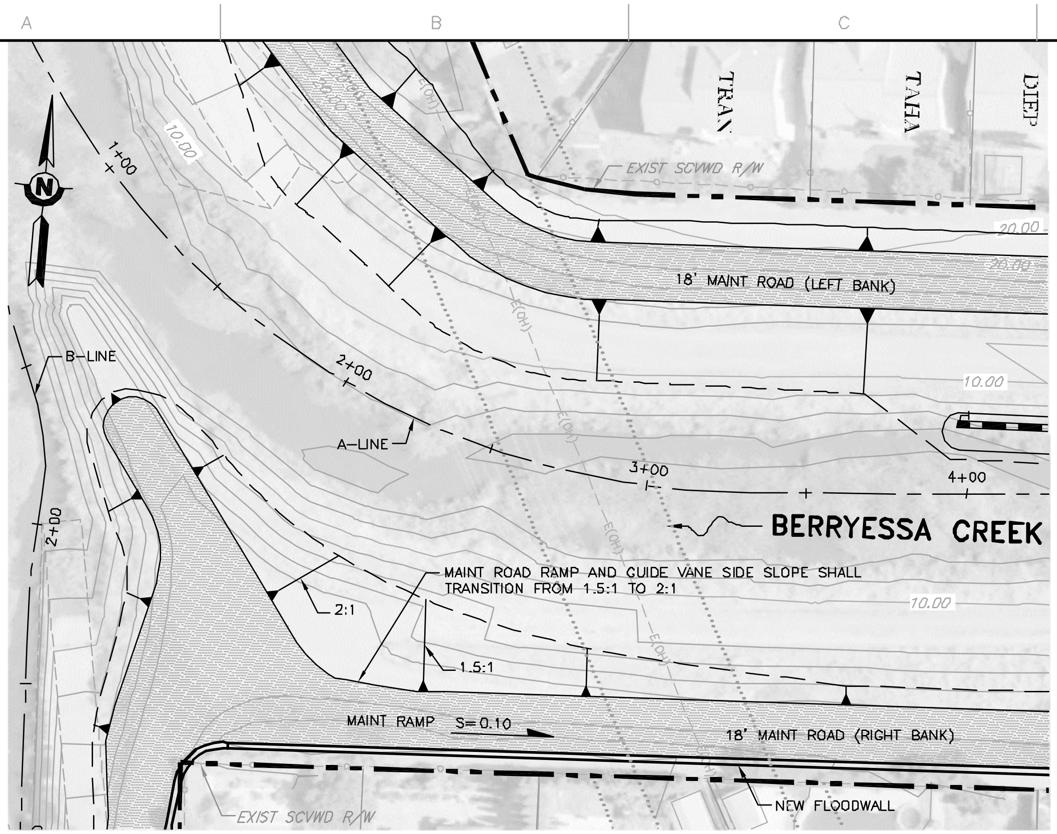
PROJECT NUMBER: 40174004

SHEET CODE: C-8

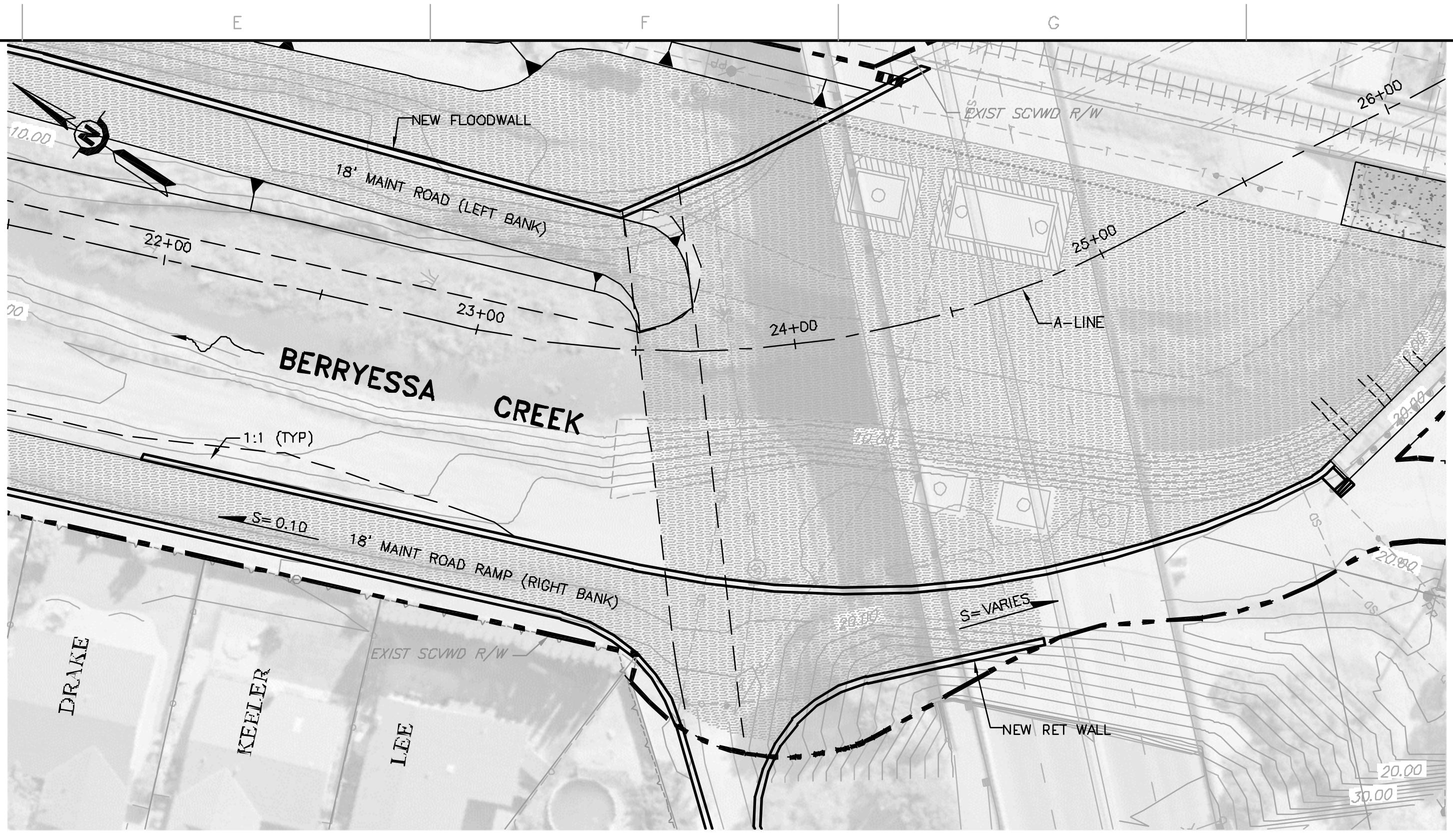
SHEET NUMBER: 32 OF 76

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX

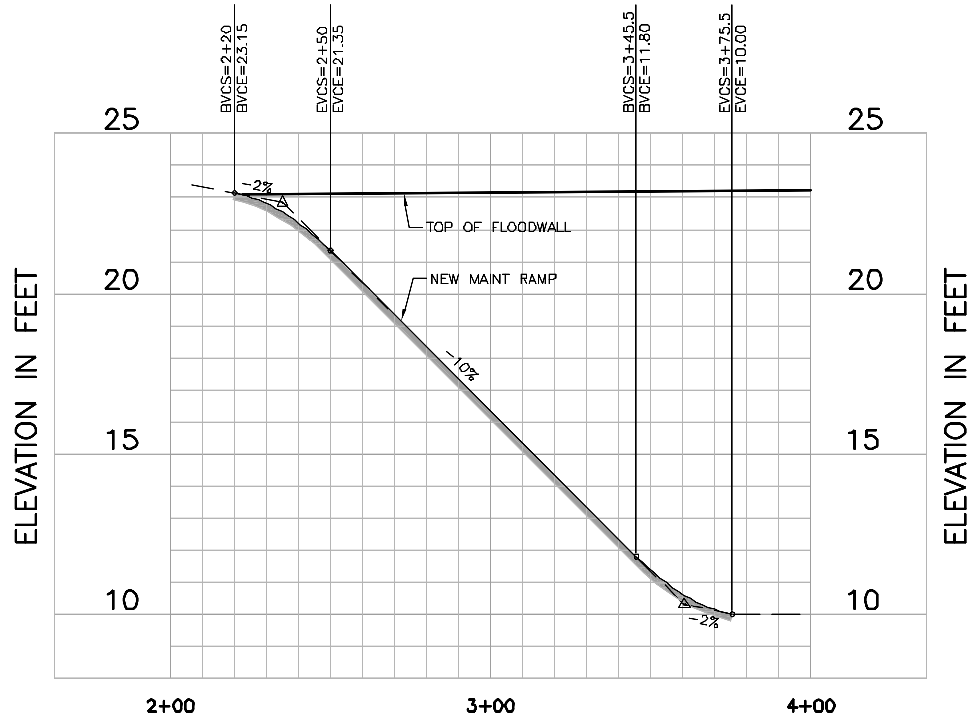
USERNAME: jennford Wed 06 Jul 2011 08:39am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\C-08



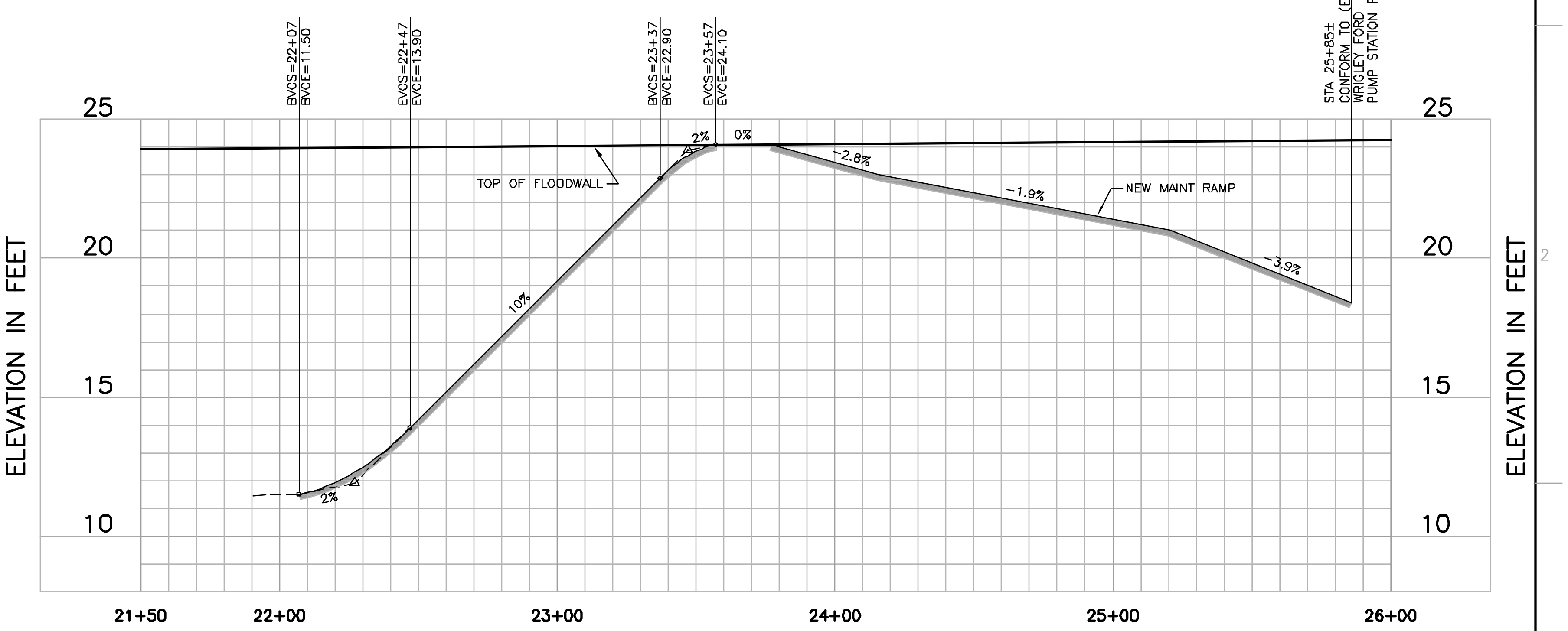
MAINTENANCE RAMP PLAN–RIGHT BANK
STA 2+20 TO STA 3+75
SCALE 1" = 30'



MAINTENANCE RAMP PLAN–RIGHT BANK
STA 22+07 TO STA 25+85±
SCALE 1" = 30'



MAINTENANCE RAMP PROFILE–RIGHT BANK
STA 2+20 TO STA 3+75
HORIZ: 1" = 30'
VERT: 1" = 3'



MAINTENANCE RAMP PROFILE–RIGHT BANK
STA 22+07 TO STA 25+85±
HORIZ: 1" = 30'
VERT: 1" = 3'

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX

REV | DESCRIPTION | DATE | APPR.

60% PRELIMINARY
06-24-11

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

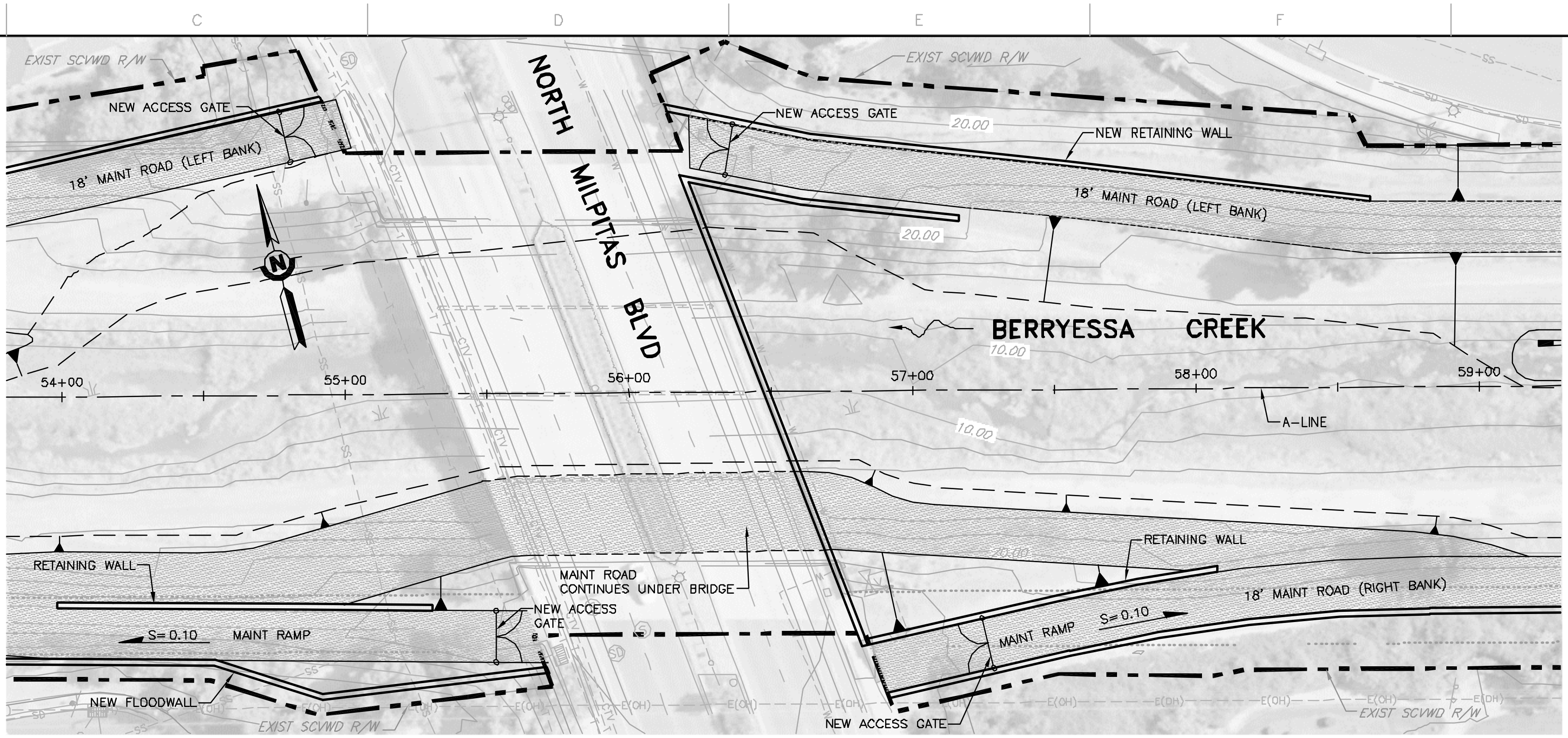
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

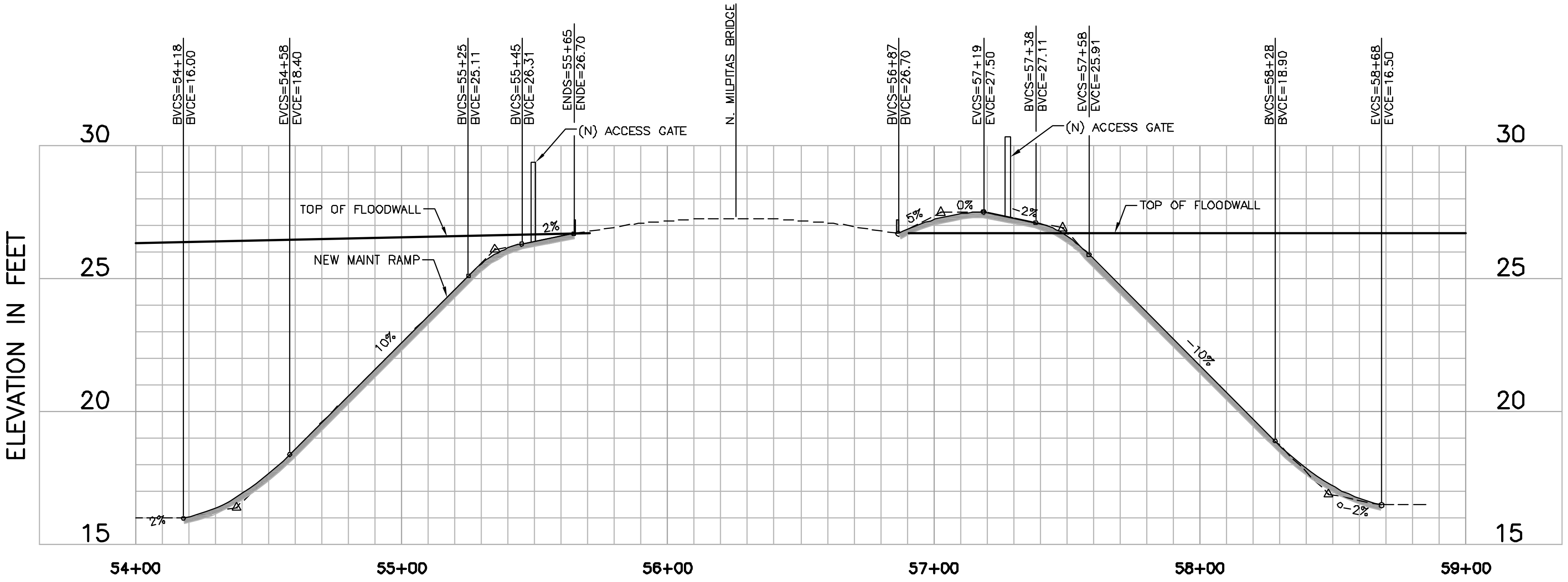
PLAN AND PROFILE MAINTENANCE RAMPS
STA 2+20 TO STA 3+75;
STA 22+07 TO STA 25+85± (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
C-9
SHEET NUMBER:
33 OF 76



MAINTENANCE RAMP PLAN–RIGHT BANK
STA 54+18 TO STA 58+68
SCALE 1" = 30'



MAINTENANCE RAMP PROFILE–RIGHT BANK
STA 54+18 TO STA 58+68
HORIZ: 1" = 30'
VERT: 1" = 3'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

PLAN AND PROFILE MAINTENANCE RAMP STA 54+18 TO STA 58+68 (A-LINE)

SCALE
AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

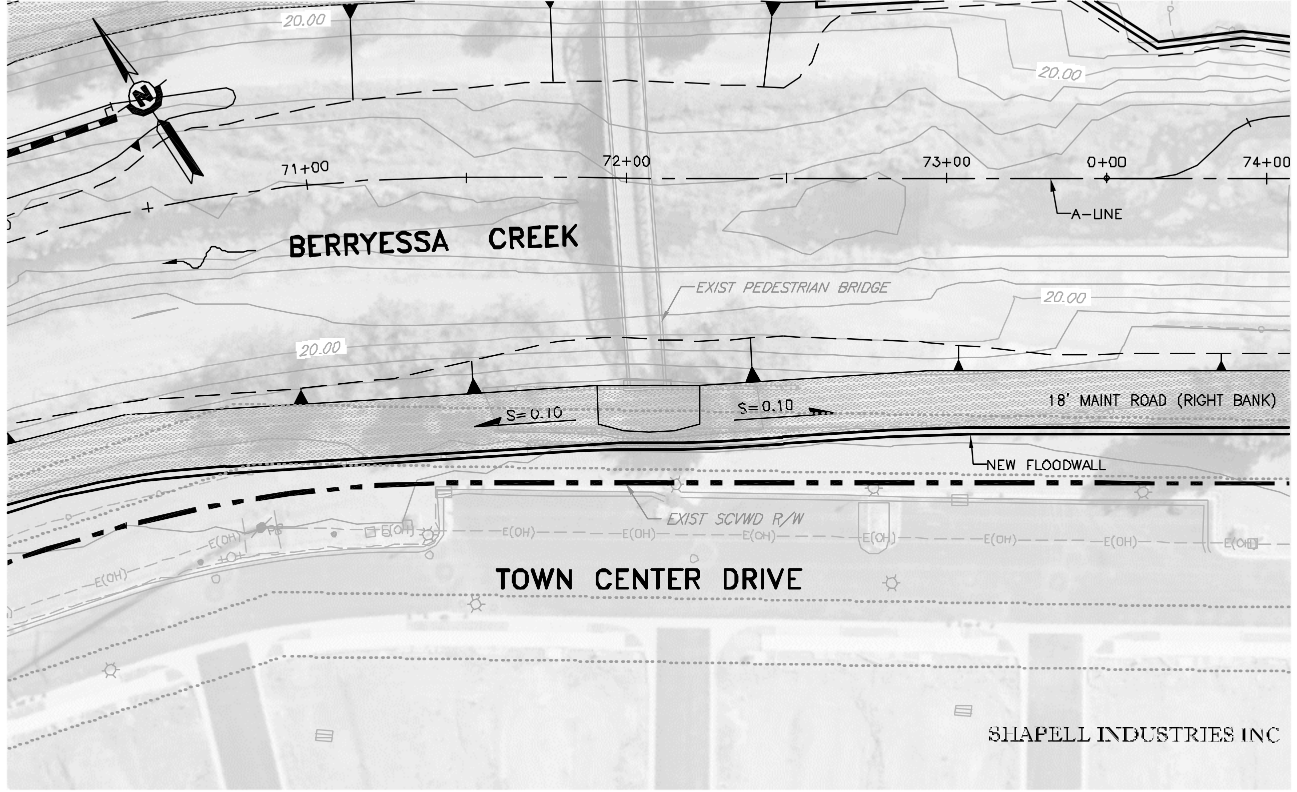
SHEET CODE:
C-10

SHEET NUMBER:
34 OF 76

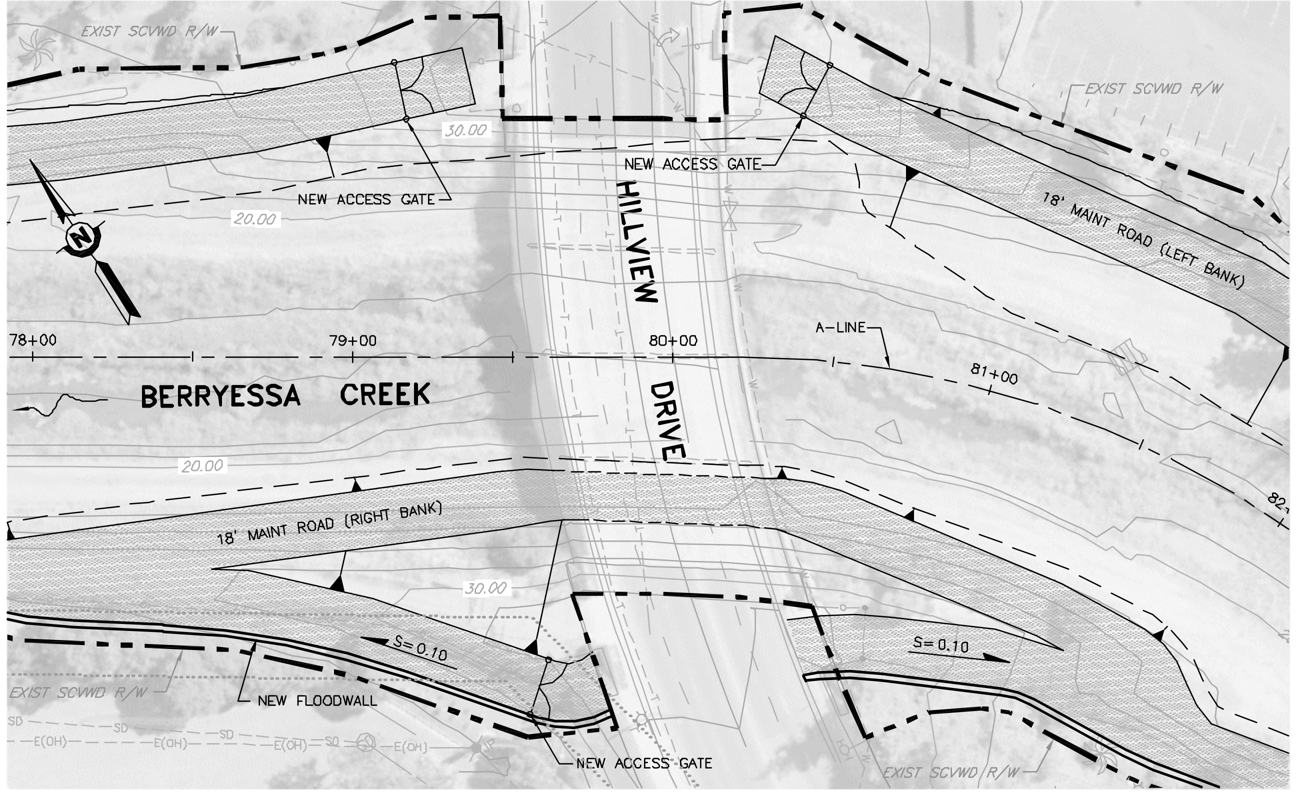
DOCUMENT NUMBER: BER_CY-C-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 08:44am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\C-10

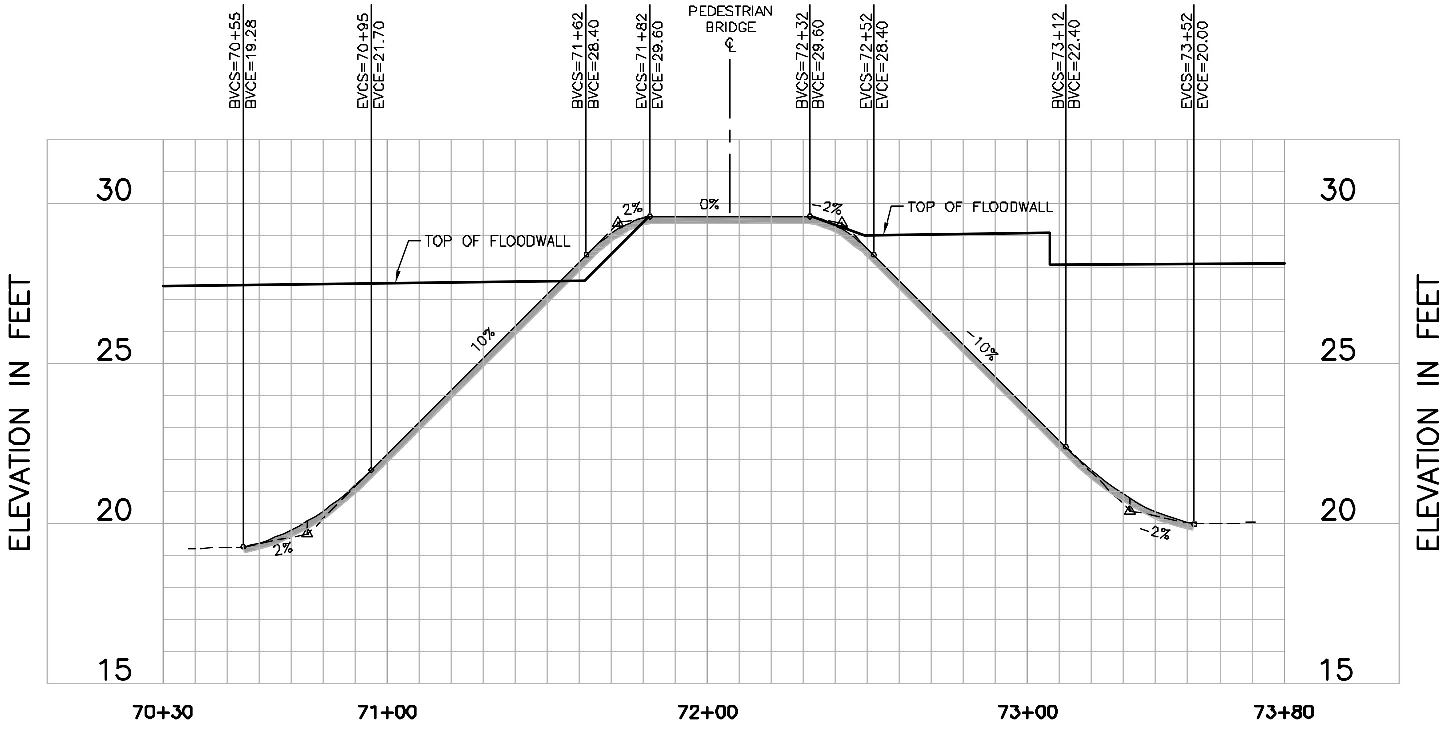
USERNAME: jennford Wed 06 Jul 2011 08:47am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\C-11



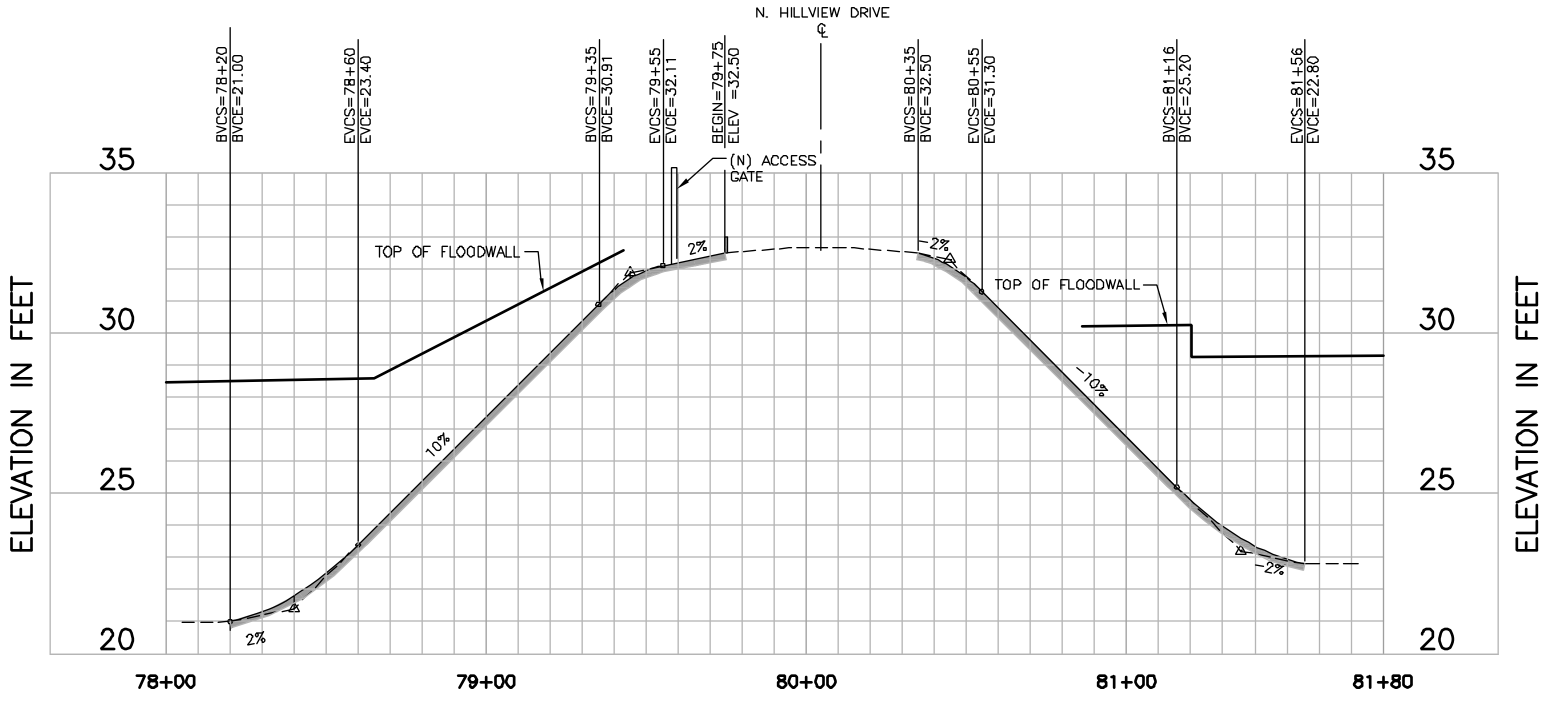
MAINTENANCE RAMP PLAN @ PEDESTRIAN BRIDGE–RIGHT BANK
STA 70+55 TO STA 73+52
SCALE 1" = 30'



MAINTENANCE RAMP PLAN @ HILLVIEW DRIVE–RIGHT BANK
STA 78+20 TO STA 81+56
SCALE 1" = 30'



MAINTENANCE RAMP PROFILE @ PEDESTRIAN BRIDGE–RIGHT BANK
STA 70+55 TO STA 73+52
HORIZ: 1" = 30'
VERT: 1" = 3'



MAINTENANCE RAMP PROFILE @ HILLVIEW DRIVE–RIGHT BANK
STA 78+20 TO STA 81+56
HORIZ: 1" = 30'
VERT: 1" = 3'

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN JULY 2008.
2. LEFT AND RIGHT BANKS ARE VIEWED LOOKING UPSTREAM.

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

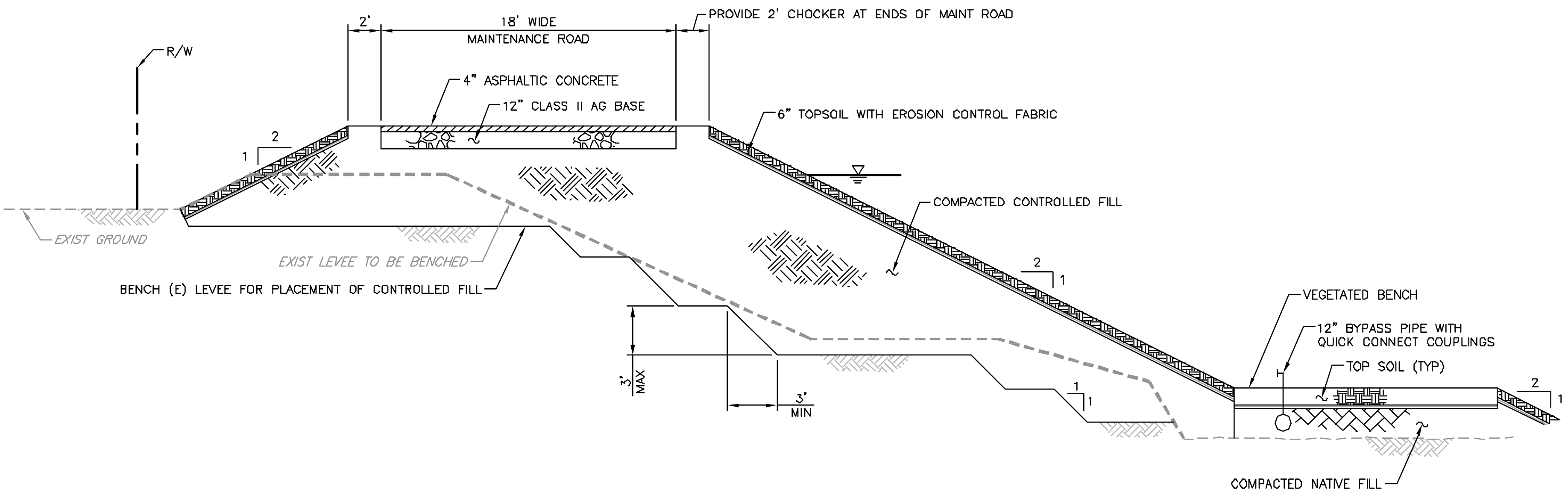
LOWER BERRYESSA CREEK PROJECT

PLAN AND PROFILE MAINTENANCE RAMPS
STA 70+55 TO STA 73+52;
STA 78+20 TO STA 81+56 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

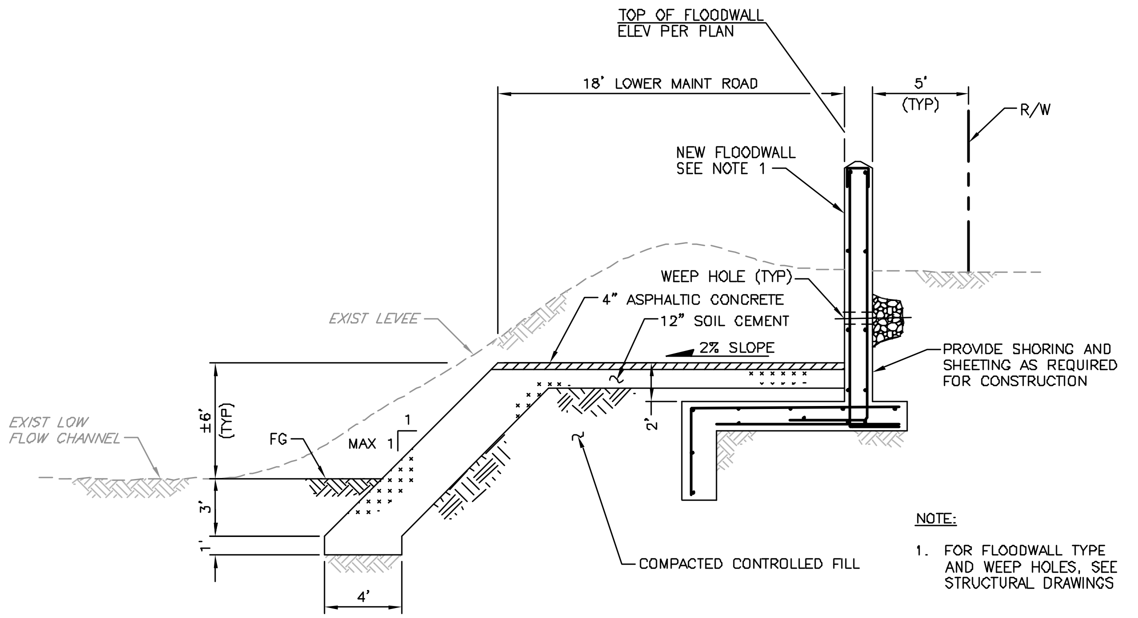
PROJECT NUMBER
40174004
SHEET CODE:
C-11
SHEET NUMBER:
35 OF 76

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX


18' WIDE
MAINTENANCE ROAD
2'
PROVIDE 2' CHOCKER AT ENDS OF MAINT ROAD
R/W
4" ASPHALTIC CONCRETE
12" CLASS II AG BASE
6" TOPSOIL WITH EROSION CONTROL FABRIC
2
1
COMPACTED CONTROLLED FILL
EXIST GROUND
EXIST LEVEE TO BE BENCHED
BENCH (E) LEVEE FOR PLACEMENT OF CONTROLLED FILL
3' MAX
3' MIN
VEGETATED BENCH
12" BYPASS PIPE WITH QUICK CONNECT COUPLINGS
TOP SOIL (TYP)
COMPACTED NATIVE FILL

SECTION (A/–) LEVEE AND HIGH MAINTENANCE ROAD (LEFT BANK)

SCALE: 1" = 5'



NOTE:

1. FOR FLOODWALL TYPE AND WEEP HOLES, SEE STRUCTURAL DRAWINGS

SECTION (B/–) FLOODWALL AND LOW MAINTENANCE ROAD (RIGHT BANK)

SCALE: 1" = 5'

USERNAME: jennford Wed 06 Jul 2011 08:49am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\C-12

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

FLOODWALL, LOW MAINTENANCE ROAD, LEVEE AND HIGH MAINTENANCE ROAD SECTIONS

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
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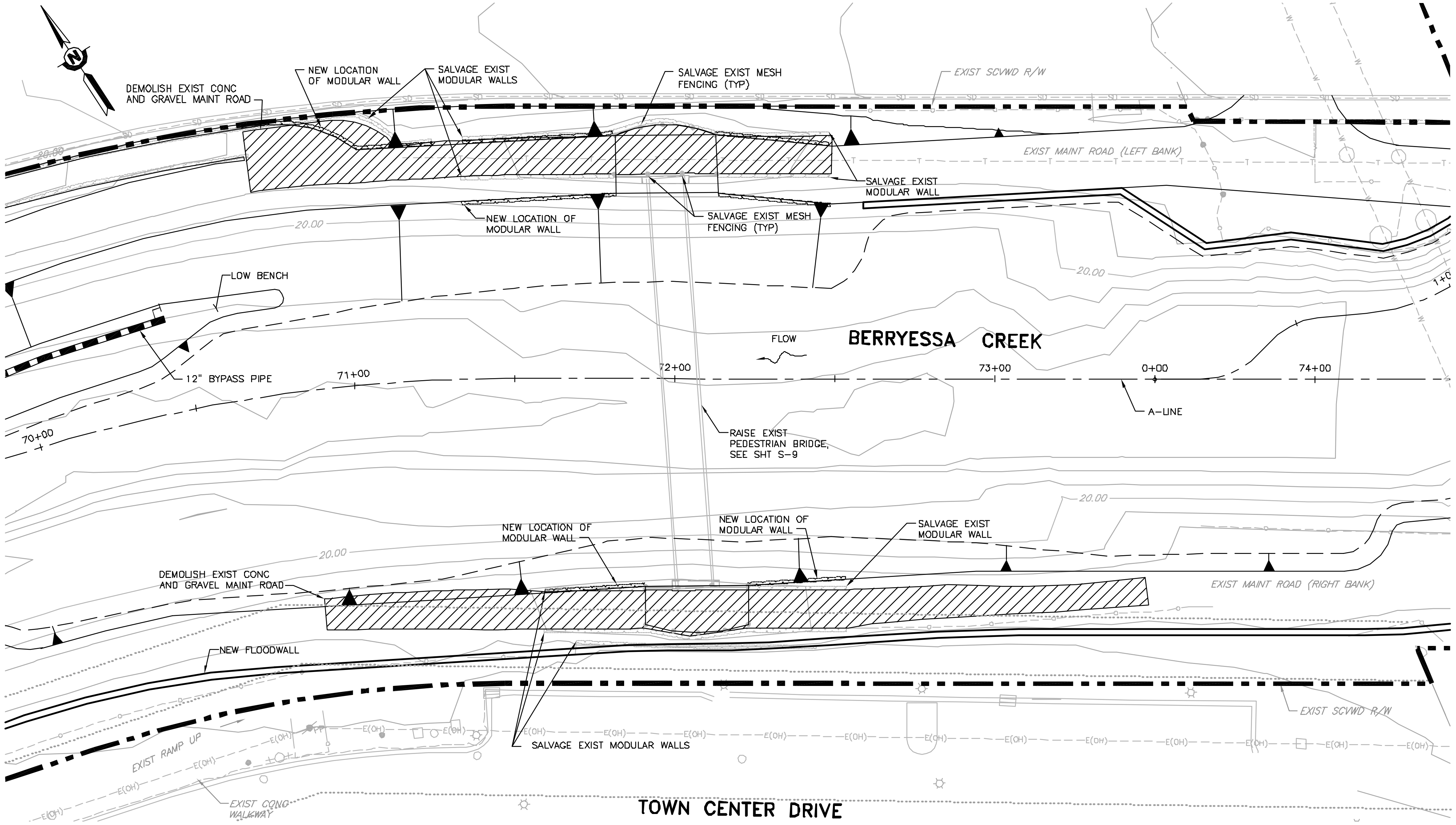
PROJECT NUMBER
40174004
SHEET CODE:
C-12
SHEET NUMBER:
36 OF 76

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX


N
DEMOLISH EXIST CONC AND GRAVEL MAINT ROAD
NEW LOCATION OF MODULAR WALL
SALVAGE EXIST MODULAR WALLS
SALVAGE EXIST MESH FENCING (TYP)
EXIST SCVWD R/W
EXIST MAINT ROAD (LEFT BANK)
SALVAGE EXIST MODULAR WALL
NEW LOCATION OF MODULAR WALL
SALVAGE EXIST MESH FENCING (TYP)
20.00
LOW BENCH
FLOW
BERRYESSA CREEK
12" BYPASS PIPE
70+00
71+00
72+00
73+00
0+00
74+00
A-LINE
RAISE EXIST PEDESTRIAN BRIDGE, SEE SHT S-9
NEW LOCATION OF MODULAR WALL
NEW LOCATION OF MODULAR WALL
SALVAGE EXIST MODULAR WALL
DEMOLISH EXIST CONC AND GRAVEL MAINT ROAD
EXIST MAINT ROAD (RIGHT BANK)
NEW FLOODWALL
EXIST SCVWD R/W
EXIST RAMP UP
E(OH)
SALVAGE EXIST MODULAR WALLS
EXIST CONC WALKWAY
TOWN CENTER DRIVE

PLAN
SCALE 1" = 20'

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	L. PENILLA
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

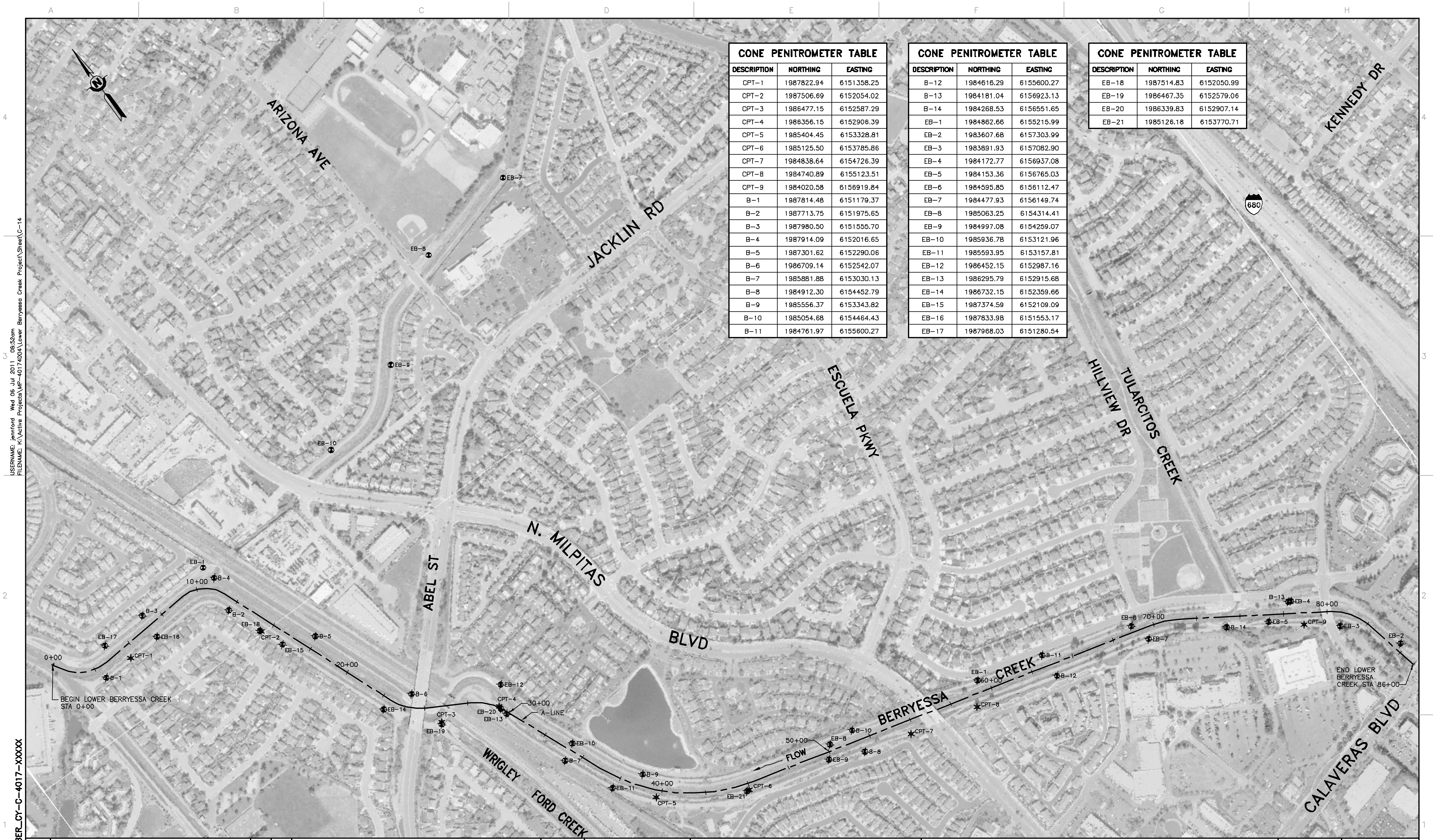
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

PEDESTRIAN BRIDGE CROSSING
STA 72+00 (A-LINE)

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
C-13
SHEET NUMBER:
37 OF 76



CONE PENITROMETER TABLE

DESCRIPTION	NORTHING	EASTING
CPT-1	1987822.94	6151358.25
CPT-2	1987506.69	6152054.02
CPT-3	1986477.15	6152587.29
CPT-4	1986356.15	6152906.39
CPT-5	1985404.45	6153328.81
CPT-6	1985125.50	6153785.86
CPT-7	1984838.64	6154726.39
CPT-8	1984740.89	6155123.51
CPT-9	1984020.58	6156919.84
B-1	1987814.48	6151179.37
B-2	1987713.75	6151975.65
B-3	1987980.50	6151555.70
B-4	1987914.09	6152016.65
B-5	1987301.62	6152290.06
B-6	1986709.14	6152542.07
B-7	1985881.88	6153030.13
B-8	1984912.30	6154452.79
B-9	1985556.37	6153343.82
B-10	1985054.68	6154464.43
B-11	1984761.97	6155600.27

CONE PENITROMETER TABLE

DESCRIPTION	NORTHING	EASTING
B-12	1984616.29	6155600.27
B-13	1984181.04	6156923.13
B-14	1984268.53	6156551.65
EB-1	1984862.66	6155215.99
EB-2	1983607.68	6157303.99
EB-3	1983891.93	6157082.90
EB-4	1984172.77	6156937.08
EB-5	1984153.36	6156765.03
EB-6	1984595.85	6156112.47
EB-7	1984477.93	6156149.74
EB-8	1985063.25	6154314.41
EB-9	1984997.08	6154259.07
EB-10	1985936.78	6153121.96
EB-11	1985593.95	6153157.81
EB-12	1986452.15	6152987.16
EB-13	1986295.79	6152915.68
EB-14	1986732.15	6152359.66
EB-15	1987374.59	6152109.09
EB-16	1987833.98	6151553.17
EB-17	1987968.03	6151280.54

CONE PENITROMETER TABLE

DESCRIPTION	NORTHING	EASTING
EB-18	1987514.83	6152050.99
EB-19	1986467.35	6152579.06
EB-20	1986339.83	6152907.14
EB-21	1985126.18	6153770.71

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. AERIAL PHOTOGRAPHY WAS TAKEN APRIL 2002.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

BORING LOCATIONS

SCALE
1" = 250'

VERIFY SCALES
0 1"
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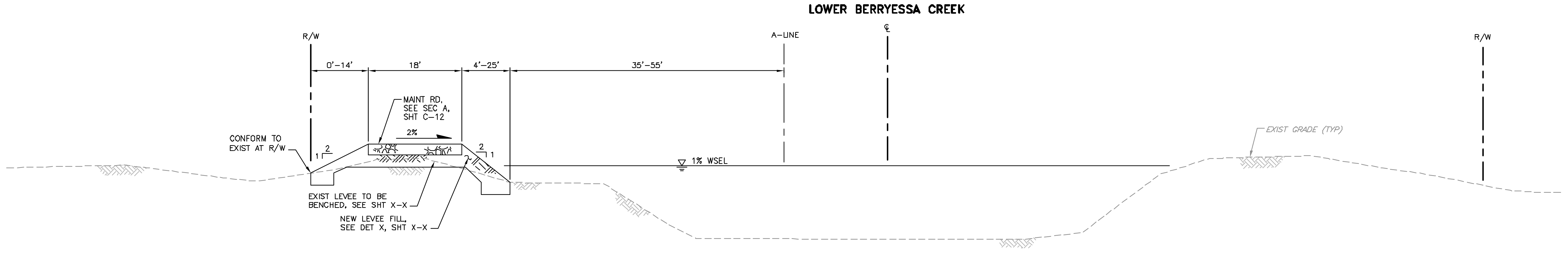
PROJECT NUMBER
40174004

SHEET CODE:
C-14

SHEET NUMBER:
38 OF 76



TYPICAL SECTION (A / C-1) **STA 0+00 TO STA 1+50**

SCALE: NTS

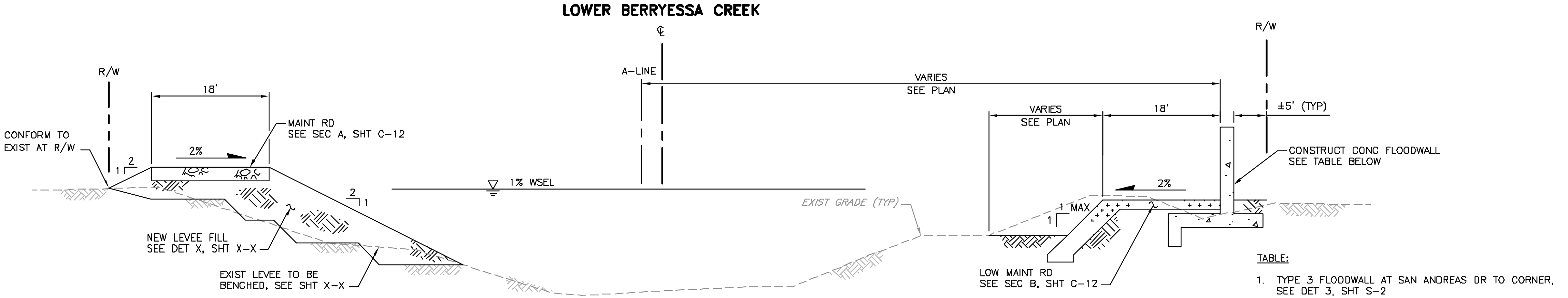

LOWER BERRYESSA CREEK
℄
R/W
A-LINE
R/W
18'
VARIES SEE PLAN
VARIES SEE PLAN
18'
±5' (TYP)
MAINT RD SEE SEC A, SHT C-12
CONFORM TO EXIST AT R/W
1
2
2%
2
1
1% WSEL
NEW LEVEE FILL SEE DET X, SHT X-X
EXIST LEVEE TO BE BENCHED, SEE SHT X-X
EXIST GRADE (TYP)
CONSTRUCT CONC FLOODWALL SEE TABLE BELOW
2%
1 MAX
1
LOW MAINT RD SEE SEC B, SHT C-12

TABLE:

1. TYPE 3 FLOODWALL AT SAN ANDREAS DR TO CORNER, SEE DET 3, SHT S-2
2. TYPE 3A FLOODWALL AT STA 1+50 TO STA 4+00, SEE DET 1, SHT S-3
3. TYPE 3 FLOODWALL AT STA 9+26 TO STA 11+30, SEE DET 3, SHT S-2
4. TYPE 3A FLOODWALL AT STA 20+30 TO STA 21+50, SEE DET 1, SHT S-3
5. TYPE 3A FLOODWALL AT STA 70+80 TO STA 72+50, SEE DET 1, SHT S-3
6. TYPE 3 FLOODWALL AT STA 76+15 TO STA 79+55, SEE DET 3, SHT S-2
7. TYPE 3 FLOODWALL AT STA 80+18 TO STA 86+00, SEE DET 3, SHT S-2

TYPICAL SECTION (B / C-1) **STA 1+50 TO STA 4+00**

	STA 9+26 TO STA 11+30
C-2	**STA 20+30 TO STA 21+50**
C-3	**STA 70+80 TO STA 72+50**
C-7	**STA 76+15 TO STA 79+55**
C-8	**STA 80+18 TO STA 86+00**

SCALE: NTS

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. ALL TYPICAL SECTIONS ARE SHOWN LOOKING UPSTREAM.

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

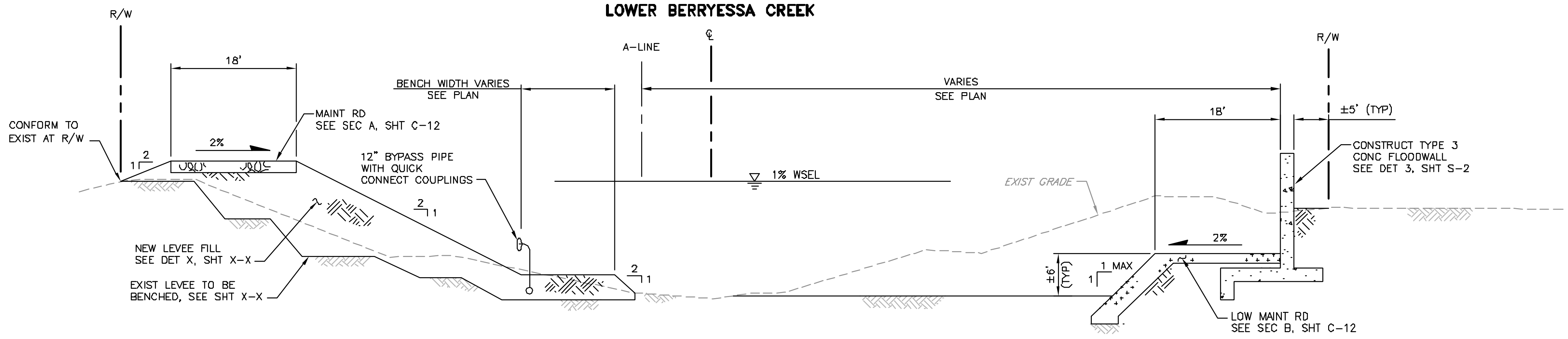
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

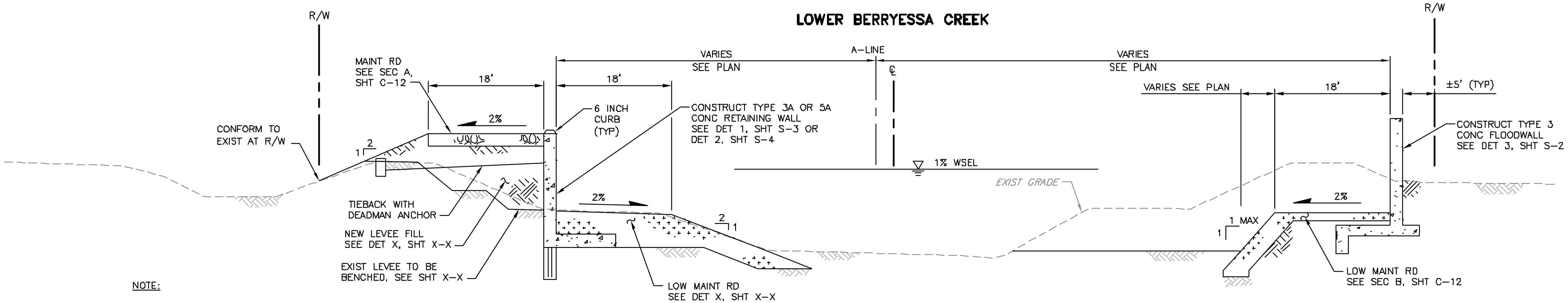
TYPICAL SECTIONS

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
C-15
SHEET NUMBER:
39 OF 76


LOWER BERRYESSA CREEK
R/W
18'
CONFORM TO EXIST AT R/W
2
1
2%
MAINT RD SEE SEC A, SHT C-12
BENCH WIDTH VARIES SEE PLAN
12" BYPASS PIPE WITH QUICK CONNECT COUPLINGS
2
1
NEW LEVEE FILL SEE DET X, SHT X-X
EXIST LEVEE TO BE BENCHED, SEE SHT X-X
2
1
A-LINE
℄
1% WSEL
VARIES SEE PLAN
EXIST GRADE
R/W
18'
±5' (TYP)
CONSTRUCT TYPE 3 CONC FLOODWALL SEE DET 3, SHT S-2
2%
±6' (TYP)
1 MAX
1
LOW MAINT RD SEE SEC B, SHT C-12

TYPICAL SECTION C / C-1, C-2, C-3, C-4, C-5, C-6, C-7 **STA 4+00 TO STA 9+26**
STA 11+30 TO STA 20+30
STA 30+30 TO STA 54+54
STA 59+12 TO STA 70+80
SCALE: NTS


LOWER BERRYESSA CREEK
R/W
MAINT RD SEE SEC A, SHT C-12
18'
2%
CONFORM TO EXIST AT R/W
2
1
TIEBACK WITH DEADMAN ANCHOR
NEW LEVEE FILL SEE DET X, SHT X-X
EXIST LEVEE TO BE BENCHED, SEE SHT X-X
18'
6 INCH CURB (TYP)
VARIES SEE PLAN
CONSTRUCT TYPE 3A OR 5A CONC RETAINING WALL SEE DET 1, SHT S-3 OR DET 2, SHT S-4
2%
2
1
LOW MAINT RD SEE DET X, SHT X-X
A-LINE
℄
1% WSEL
VARIES SEE PLAN
EXIST GRADE
VARIES SEE PLAN
18'
R/W
±5' (TYP)
CONSTRUCT TYPE 3 CONC FLOODWALL SEE DET 3, SHT S-2
2%
1 MAX
1
LOW MAINT RD SEE SEC B, SHT C-12

NOTE:

1. RETAINING WALL FOR LOW MAINT RD RAMP (RIGHT BANK)
   – STA 22+66 TO STA 23+54

TYPICAL SECTION D / C-3 **STA 21+50 TO STA 23+54**
SCALE: NTS

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. ALL TYPICAL SECTIONS ARE SHOWN LOOKING UPSTREAM.

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

TYPICAL SECTIONS

SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

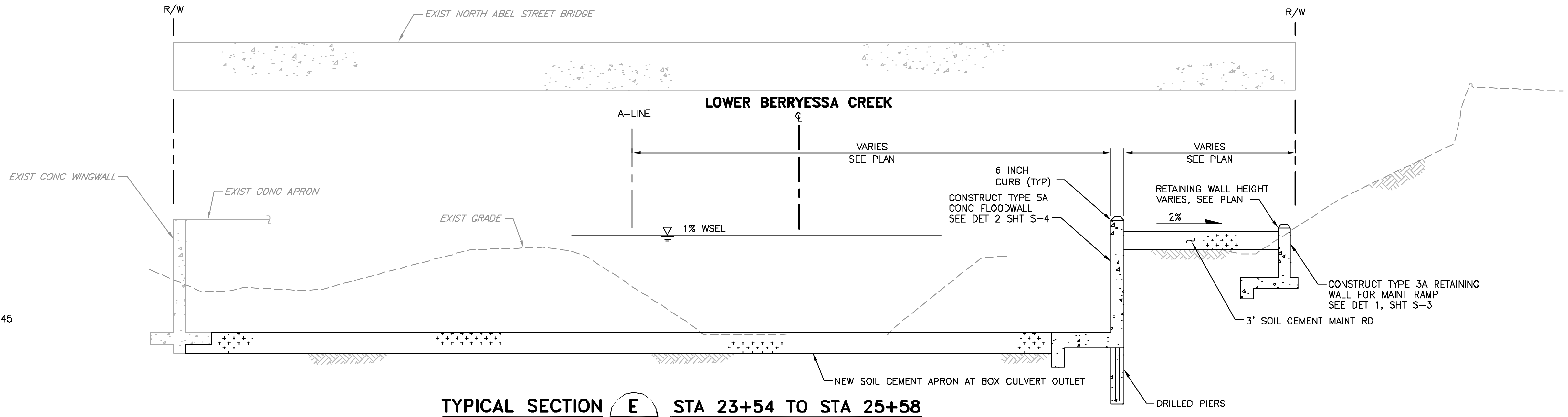
PROJECT NUMBER: 40174004
SHEET CODE: C-16
SHEET NUMBER: 40 OF 76

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 08:55am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\C-16

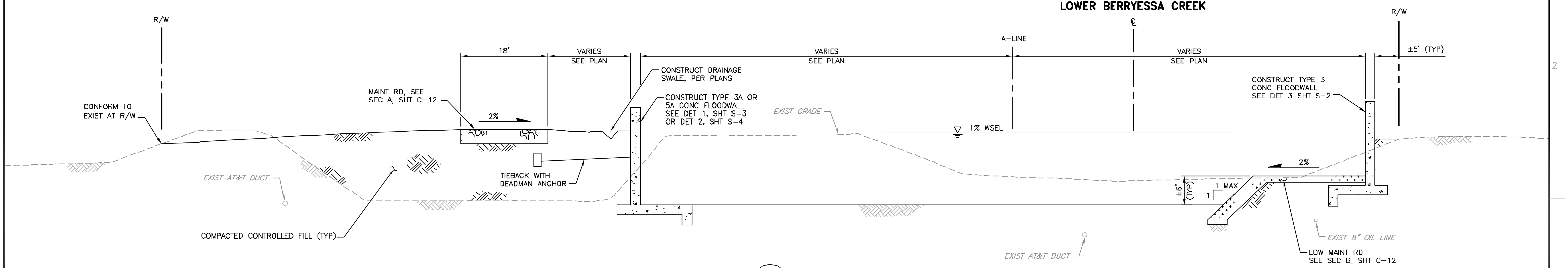
NOTES:

1. RETAINING WALL – STA 23+54 TO STA 24+45



TYPICAL SECTION (E / C-3) **STA 23+54 TO STA 25+58**

SCALE: NTS



TYPICAL SECTION (F / C-3) **STA 27+20 TO STA 29+25**

SCALE: NTS

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. ALL TYPICAL SECTIONS ARE SHOWN LOOKING UPSTREAM.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

No. C67534
Exp. 06/30/11
TONY TEGHEN NDAH

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

TYPICAL SECTIONS

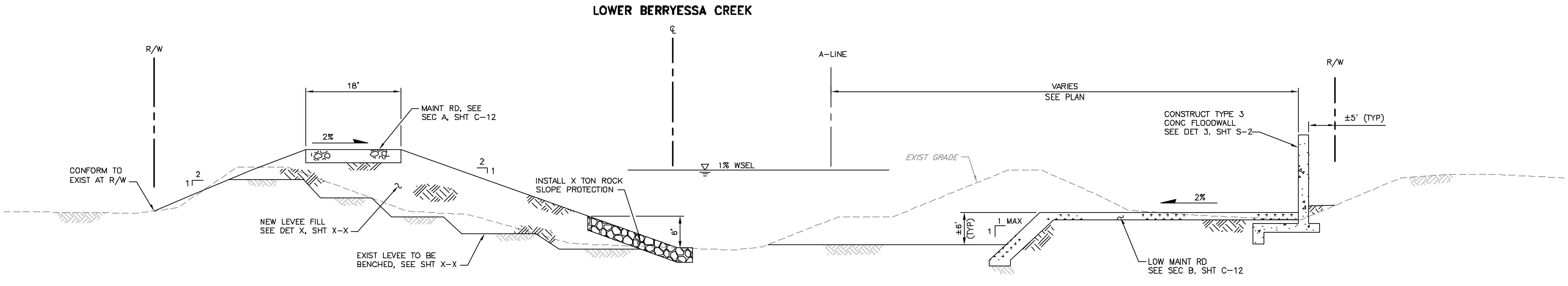
SCALE: AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004

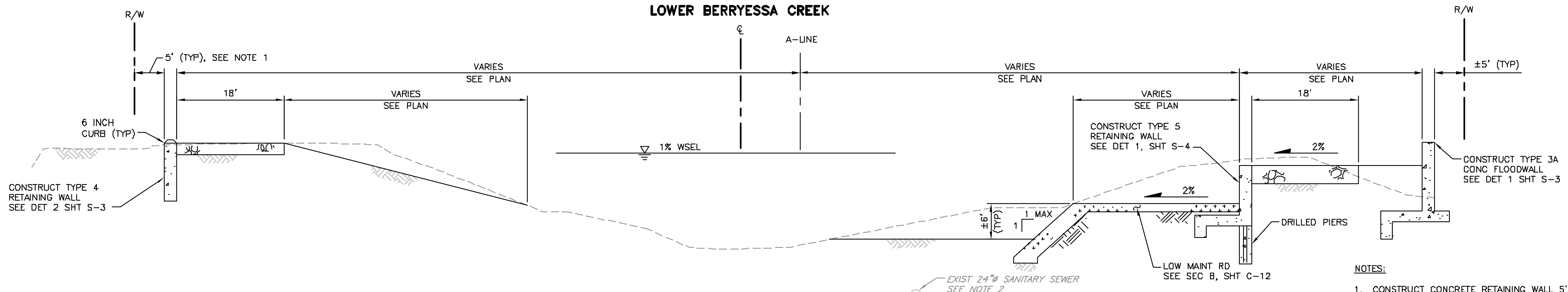
SHEET CODE: C-17

SHEET NUMBER: 41 OF 76


LOWER BERRYESSA CREEK
℄
R/W
A-LINE
R/W
18'
MAINT RD, SEE SEC A, SHT C-12
2%
2
1
CONFORM TO EXIST AT R/W
1% WSEL
INSTALL X TON ROCK SLOPE PROTECTION
6'
NEW LEVEE FILL SEE DET X, SHT X-X
EXIST LEVEE TO BE BENCHED, SEE SHT X-X
VARIES SEE PLAN
CONSTRUCT TYPE 3 CONC FLOODWALL SEE DET 3, SHT S-2
±5' (TYP)
EXIST GRADE
2%
±6' (TYP)
1 MAX
1
LOW MAINT RD SEE SEC B, SHT C-12

TYPICAL SECTION G C-3 STA 29+25 TO STA 30+30

SCALE: NTS


LOWER BERRYESSA CREEK
R/W
℄
A-LINE
R/W
5' (TYP), SEE NOTE 1
VARIES SEE PLAN
18'
VARIES SEE PLAN
6 INCH CURB (TYP)
CONSTRUCT TYPE 4 RETAINING WALL SEE DET 2 SHT S-3
1% WSEL
VARIES SEE PLAN
VARIES SEE PLAN
VARIES SEE PLAN
18'
±5' (TYP)
CONSTRUCT TYPE 5 RETAINING WALL SEE DET 1, SHT S-4
2%
2%
CONSTRUCT TYPE 3A CONC FLOODWALL SEE DET 1 SHT S-3
±6' (TYP)
1 MAX
1
DRILLED PIERS
LOW MAINT RD SEE SEC B, SHT C-12
EXIST 24"ø SANITARY SEWER SEE NOTE 2

NOTES:

1. CONSTRUCT CONCRETE RETAINING WALL 5' OFF PROPERTY LINE
2. 24"ø SANITARY SEWER TO BE PROTECTED IN PLACE

TYPICAL SECTION H C-5 STA 54+54 TO STA 55+37

SCALE: NTS

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. ALL TYPICAL SECTIONS ARE SHOWN LOOKING UPSTREAM.

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

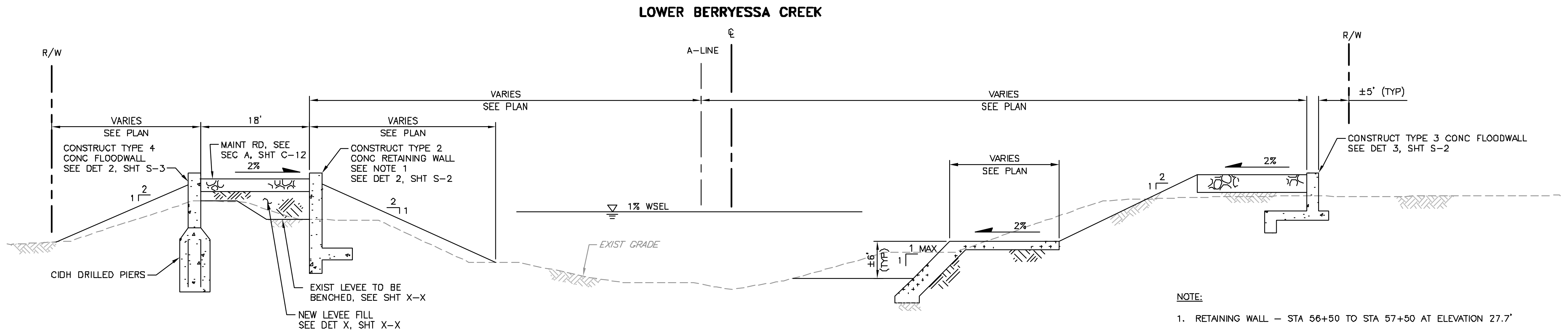
TYPICAL SECTIONS

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
C-18
SHEET NUMBER:
42 OF 76

DOCUMENT NUMBER: BER_CY-C-4017-XXXXX

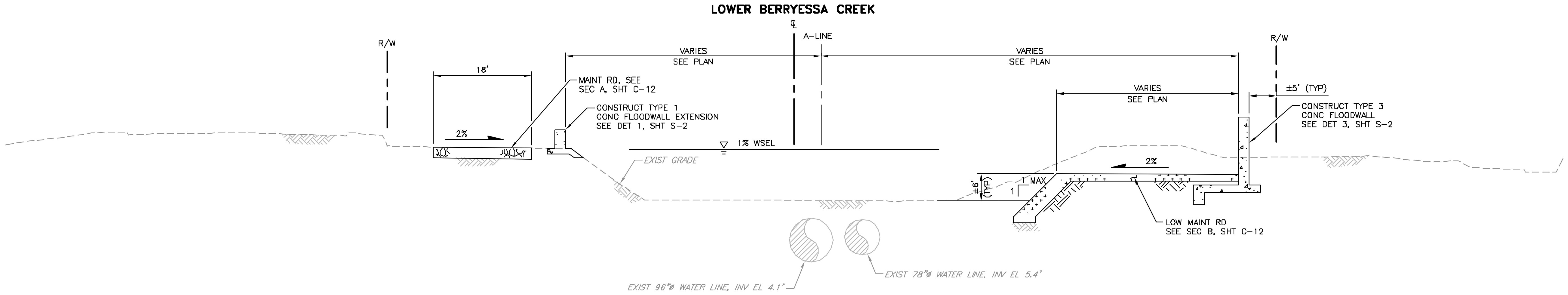
USERNAME: jennford Wed 06 Jul 2011 08:57am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\C-18


LOWER BERRYESSA CREEK
℄
A-LINE
R/W
R/W
VARIES
SEE PLAN
18'
VARIES
SEE PLAN
VARIES
SEE PLAN
VARIES
SEE PLAN
VARIES
SEE PLAN
±5' (TYP)
CONSTRUCT TYPE 4 CONC FLOODWALL SEE DET 2, SHT S-3
MAINT RD, SEE SEC A, SHT C-12
2%
CONSTRUCT TYPE 2 CONC RETAINING WALL SEE NOTE 1 SEE DET 2, SHT S-2
1 2
2 1
1% WSEL
EXIST GRADE
CIDH DRILLED PIERS
EXIST LEVEE TO BE BENCHED, SEE SHT X-X
NEW LEVEE FILL SEE DET X, SHT X-X
±6' (TYP)
1 MAX
1
2%
2%
1 2
CONSTRUCT TYPE 3 CONC FLOODWALL SEE DET 3, SHT S-2

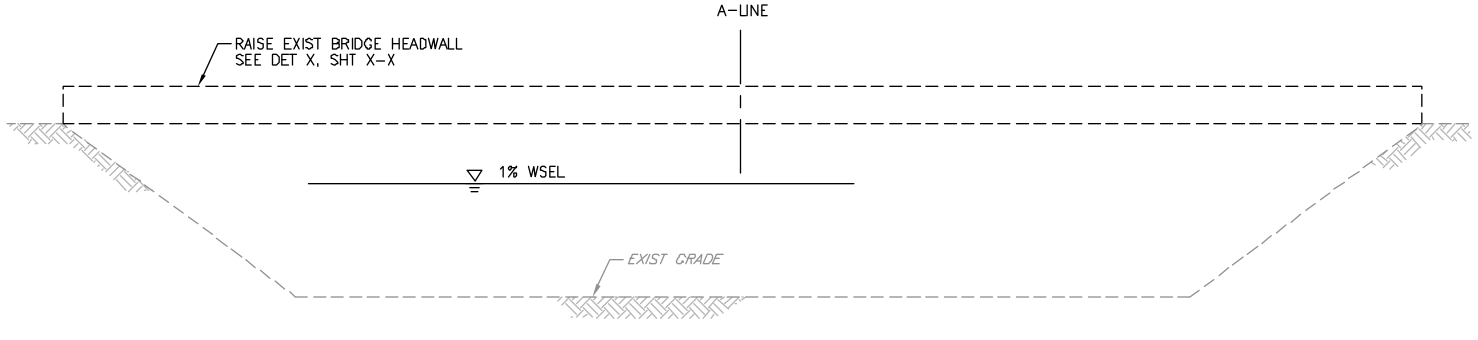
NOTE:

1. RETAINING WALL – STA 56+50 TO STA 57+50 AT ELEVATION 27.7'

TYPICAL SECTION (I / C-5 / C-6) **STA 56+47 TO STA 59+12**
SCALE: NTS


LOWER BERRYESSA CREEK
℄
A-LINE
R/W
R/W
VARIES
SEE PLAN
VARIES
SEE PLAN
VARIES
SEE PLAN
18'
±5' (TYP)
2%
MAINT RD, SEE SEC A, SHT C-12
CONSTRUCT TYPE 1 CONC FLOODWALL EXTENSION SEE DET 1, SHT S-2
1% WSEL
EXIST GRADE
CONSTRUCT TYPE 3 CONC FLOODWALL SEE DET 3, SHT S-2
2%
±6' (TYP)
1 MAX
1
LOW MAINT RD SEE SEC B, SHT C-12
EXIST 96"Ø WATER LINE, INV EL 4.1'
EXIST 78"Ø WATER LINE, INV EL 5.4'

TYPICAL SECTION (J / C-7) **STA 72+50 TO 76+15**
SCALE: NTS



TYPICAL SECTION (K / C-5) **STA 55+80 TO 56+60**
NORTH MILPITAS BLVD.
SCALE: NTS

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. ALL TYPICAL SECTIONS ARE SHOWN LOOKING UPSTREAM.

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

TYPICAL SECTIONS

SCALE
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VERIFY SCALES
0 1"
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PROJECT NUMBER
40174004
SHEET CODE:
C-19
SHEET NUMBER:
43 OF 76

GENERAL NOTES: (STRUCTURAL)

1. ALL CONSTRUCTION SHALL BE CARRIED OUT BY CALIFORNIA LICENSED CONTRACTOR(S). ALL CONSTRUCTION PROCEDURES SHALL CONFORM TO 'OSHA' STANDARDS AND ALL PREVAILING CODES AND REGULATIONS.

2. THE CONTRACT PLANS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE SHOWN, THEY DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE, DIRECT AND SUPERVISE ALL THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES SEQUENCES AND PROCEDURES.

3. TYPICAL DETAILS AND NOTES ARE PROVIDED FOR GENERAL CONSTRUCTION CONDITIONS. THE DETAILS ARE SHOWN IN DIAGRAMMATIC FORM AND ARE NOT TO BE SCALED.

4. CONTRACTOR SHALL COORDINATE THESE PLANS WITH PLANS OF OTHER INVOLVED TRADES. CONTRACTOR SHALL COORDINATE ALL DIMENSIONS AND FIELD CONDITIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL. ANY DISCREPANCY FOUND SHALL BE REPORTED TO THE ENGINEER FOR REMEDIES PRIOR TO FURTHER CONSTRUCTION IN RELATION TO THE DISCREPANCY. IN CASE OF PROVISIONAL DISCREPANCY, THE MORE STRINGENT OF THE TWO WOULD APPLY AT NO ADDITIONAL COST.

5. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR TEMPORARY SHORING OF THE TRENCHES, EXCAVATION PITS, EXISTING STRUCTURES TO REMAIN, ETC. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SELECTION, DESIGN, SAFE MAINTENANCE AND REMOVAL OF THE SHORING REQUIRED TO COMPLETE THE PROJECT. WHERE SHORING IS REQUIRED, CONTRACTOR SHALL SUBMIT SHOP DRAWINGS DULY DESIGNED, PREPARED AND WET SIGNED BY A CALIFORNIA LICENSED CIVIL/STRUCTURAL ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.

6. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION JOINTS SHALL BE ROUGHENED AT ENTIRE SURFACE TO 1/4" AMPLITUDE AND CLEANED PRIOR TO NEXT CONCRETE POUR.

7. FOR EXISTING AND FINAL GRADES AND WALL ELEVATION, SEE "CIVIL PLANS".

8. WHERE SAW CUTTING OF EXISTING STRUCTURE IS REQUIRED, DO NOT SAW CUT BEYOND THE CORNERS. REMOVE OR CHIP CONCRETE AT CORNERS FOR SQUARENESS. IF SAW CUTTING PROPAGATES BEYOND THE CORNER, CONTRACTOR SHALL SAW CUT, REMOVE CONCRETE AND REPAIR AS DIRECTED BY THE ENGINEER AT CONTRACTOR'S COST.

9. FOR WATER PROOFING, "ADEKA ULTRA SEAL MC-2010 MN – STRIP WATERSTOP" PRODUCTS ARE SHOWN FOR UNIFORM BIDS. CONTRACTOR MAY SUBSTITUTE THEM WITH EQUAL OR BETTER PRODUCT. IN CASE OF SUBSTITUTION, CONTRACTOR SHALL SUBMIT ALL DOCUMENTATION NECESSARY TO PROVE THE PRODUCT EQUAL OR BETTER AND SHALL SUBMIT COMBINED WARRANTY BY THE MANUFACTURER AND THE CONTRACTOR ASSURING FULL WATERTIGHTNESS.

10. INSTALLATION OF STRIP WATERSTOP SHALL BE CONTINUOUS AS SHOWN ON PLANS, SPECIFICATIONS AND AS PER PRODUCT MANUFACTURER'S RECOMMENDATIONS TO ENSURE FULL WATERTIGHTNESS.

11. UNLESS SHOWN OR NOTED ON THE PLANS, ALL JOINT FILLERS SHALL BE PRE-MOLDED ASPHALT IMPREGNATED JOINT FILLER MATERIAL, PRECUT PRECISELY FOR EACH LOCATION AND INSTALL AS SHOWN AND AS PER MANUFACTURER'S RECOMMENDATIONS.

12. REINFORCING BARS THUS (EC) MARKED SHALL BE EPOXY COATED AFTER FABRICATION AND SHALL BE INSTALLED AS AND WHERE SHOWN ON PLANS.

13. JOINT SEALANT SHALL BE INSTALLED CONTINUOUS AT THE JOINTS AT TOP AND AT BOTH FACES OF THE WALLS. CLEAN CONCRETE SURFACES AND INSTALL SEALANT AS LATE AS PRACTICAL, PRIOR TO COMPLETION OF THE PROJECT.

14. AT CONTRACTOR'S OPTION, THE SMOOTH GALVANIZED DOWELS MAY BE SUBSTITUTED BY SMOOTH STAINLESS STEEL DOWELS OF THE SAME SIZE.

15. BACKFILL ON BOTH SIDES OF WALLS/STRUCTURES SHALL BE CARRIED OUT SIMULTANEOUSLY IN MAXIMUM 8" LIFTS WITH LIFT DIFFERENCE NO LARGER THAN 8"; UNLESS OTHERWISE NOTED.

16. CONTRACTOR SHALL SUBMIT MANUFACTURER'S SPECIFICATIONS FOR BONDING MATERIAL AND PROCEDURES FOR INSTALLATION OF 'DRILL AND BOND' DOWELS FOR ENGINEER'S REVIEW, PRIOR TO CONSTRUCTION. BLOW CLEAN DRILLED HOLES AND INSTALL DOWELS & ANCHORS INTO BONDING MATERIAL PER SPECIFICATIONS DURING CONTINUOUS INSPECTION OF INDEPENDENT SPECIAL INSPECTOR. 'SPECIAL INSPECTOR', AS DEFINED IN 1997 UNIFORM BUILDING CODE, SECTION 1701, SHALL BE RETAINED BY THE SANTA CLARA VALLEY WATER DISTRICT. THE SPECIAL INSPECTOR SHALL SUBMIT REPORTS TO THE WATER DISTRICT AND THE ENGINEER.

17. CONTRACTOR SHALL BE RESPONSIBLE TO SCHEDULE ALL INSPECTIONS AND TESTING PER SPECIFICATIONS AND INDIVIDUAL AGENCY'S REQUIREMENTS IN TIMELY MANNER.

18. EXCAVATE NEATLY AND CONSTRUCT GRADE BEAM OVER UNDISTURBED NATURAL SOIL. ANY OVEREXCAVATION SHALL BE BACKFILLED AND COMPACTED TO 95% COMPACTION PRIOR TO CONSTRUCTION OF THE GRADE BEAM.

DESIGN CRITERIA

1. UNIT STRESS FOR REINFORCED CONCRETE
   a. CONCRETE: f'_c = 4,000 psi (UON)
   b. REINFORCING STEEL: f_y = 60,000 psi (UON)

DEVELOPMENT AND SPLICE LENGTH

1. IN TENSION

CLEAR SPACING> $2d_b$, AND

CONCRETE CLEAR COVER> d_b

d_b : NORMINAL BAR DIAMETER (INCHES)

L_d : TENSION DEVELOPMENT LENGTH (INCHES)

L_T : DEVELOPMENT LENGTH OF TOP BARS IN TENSION (INCHES) $L_T = 1.3L_d$

L_{SB} : TENSION LAP SPLICE LENGTH FOR OTHER THAN TOP BARS (INCHES) $L_{SB} = 1.3L_d$

L_{SBT} : TENSION LAP SPLICE LENGTH FOR TOP BARS (INCHES) $L_{SBT} = 1.69L_d$

X	fc'=3000 psi				fc'=4000 psi			
BAR SIZE	L_D	L_T	L_{SB}	L_{SBT}	L_D	L_T	L_{SB}	L_{SBT}
3	17	23	23	30	15	20	20	26
4	22	29	29	38	19	25	25	33
5	28	37	37	49	24	32	32	42
6	33	43	43	56	29	38	38	50
7	48	63	63	82	42	55	55	72
8	55	72	72	94	48	63	63	82

2. IN COMPRESSION

L_{DC}: DEVELOPMENT LENGTH OF BARS OR DOWELS IN COMPRESSION (INCHES)

L_C : LAP SPLICE LENGTH IN COMPRESSION (INCHES)

BAR SIZE	L_C	L_{DC}	
		fc'=3000 psi	fc'=4000 psi
3	11	8.2	8**
4	15	11	9.5
5	19	13.7	11.9
6	23	16.4	14.2
7	26	19.2	16.6
8	30	21.9	19

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE
JUNE 2011
DESIGN
M.T. NGUYEN
DRAWN
L. PENILLA
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
MINH-TRI NGUYEN
No. 25260
Exp. 12/31/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:
LOWER BERRYESSA CREEK
PROJECT
GENERAL STRUCTURAL NOTES

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
S-1
SHEET NUMBER:
44 OF 76

USERNAME: jennford Wed 06 Jul 2011 09:19am
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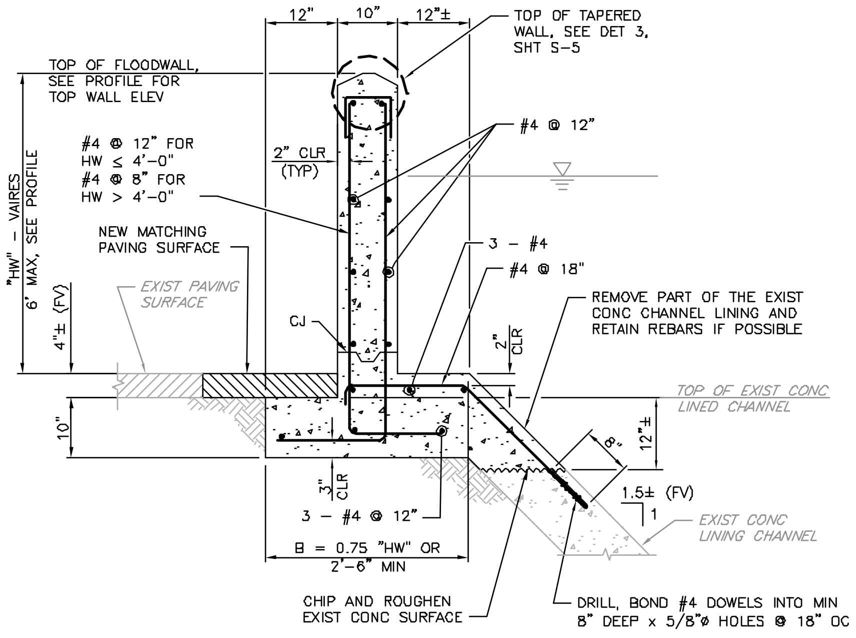
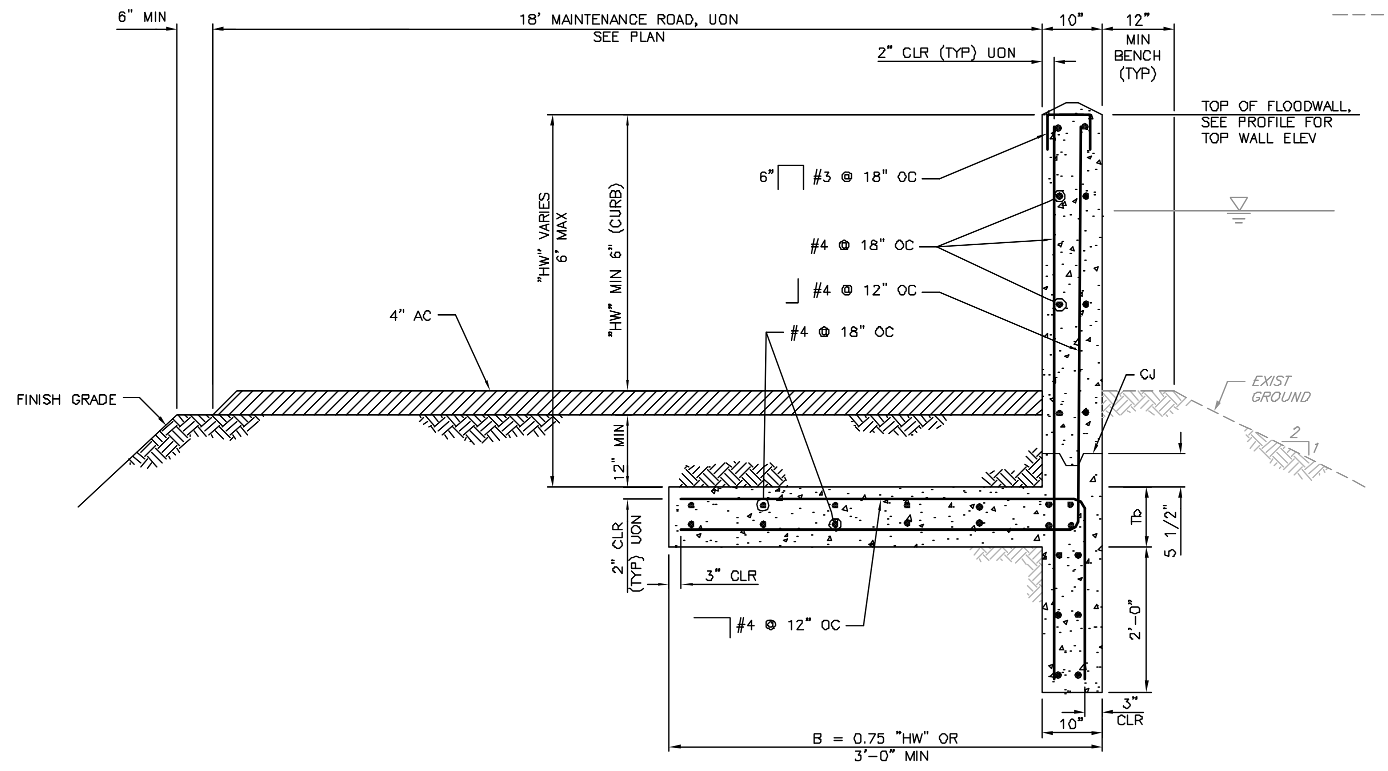
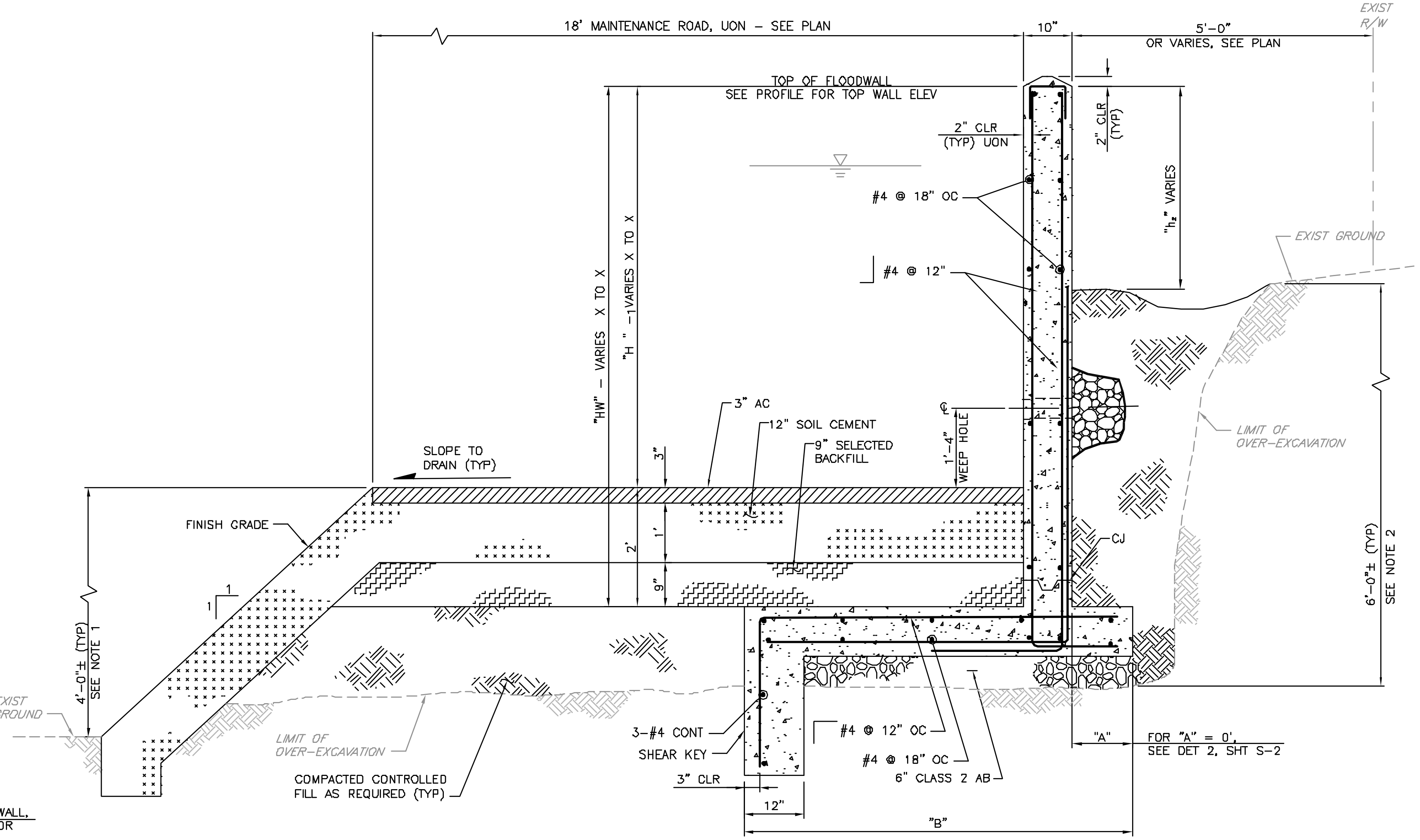

12"
10"
12"±
TOP OF TAPERED WALL, SEE DET 3, SHT S-5
TOP OF FLOODWALL, SEE PROFILE FOR TOP WALL ELEV
#4 @ 12" FOR HW ≤ 4'-0"
#4 @ 8" FOR HW > 4'-0"
"HW" - VARIES 6' MAX, SEE PROFILE
2" CLR (TYP)
#4 @ 12"
NEW MATCHING PAVING SURFACE
EXIST PAVING SURFACE
4"± (FV)
3 - #4
#4 @ 18"
CJ
2" CLR
REMOVE PART OF THE EXIST CONC CHANNEL LINING AND RETAIN REBARS IF POSSIBLE
TOP OF EXIST CONC LINED CHANNEL
10"
3" CLR
8"
12"±
1.5± (FV)
1
3 - #4 @ 12"
EXIST CONC LINING CHANNEL
B = 0.75 "HW" OR 2'-6" MIN
CHIP AND ROUGHEN EXIST CONC SURFACE
DRILL, BOND #4 DOWELS INTO MIN 8" DEEP x 5/8"Ø HOLES @ 18" OC

DETAIL ① **TYPE 1 FLOODWALL ON EXISTING CONCRETE CHANNEL LINING**
LEFT BANK: STA 73+00 TO 74+30
STA 74+30 TO 76+30
SCALE: 3/4" = 1'-0"



DETAIL ② **TYPE 2 FLOODWALL**
RIGHT BANK: STA 21+50 TO STA 22+00
LEFT BANK: STA 71+50 TO 73+00
SCALE: 3/4" = 1'-0"



NOTES:

1. OVER-EXCAVATED AND RECOMPACTED AS NECESSARY, SEE SPECS.
2. FOR EXCAVATION OVER 6' WITHIN THE LIMITED RIGHT-OF-WAY, CONTRACTOR HAS OPTION TO USE TYPE 5 FLOODWALL.

DETAIL ③ **TYPE 3 FLOODWALL**
SEE TABLE 3
SCALE: 3/4" = 1'-0"

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE: JUNE 2011
DESIGN: M.T. NGUYEN
DRAWN: R. AGREDA, L. PENILLA
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
MINH-TRI NGUYEN
No. 25260
Exp. 12/31/11
CIVIL
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

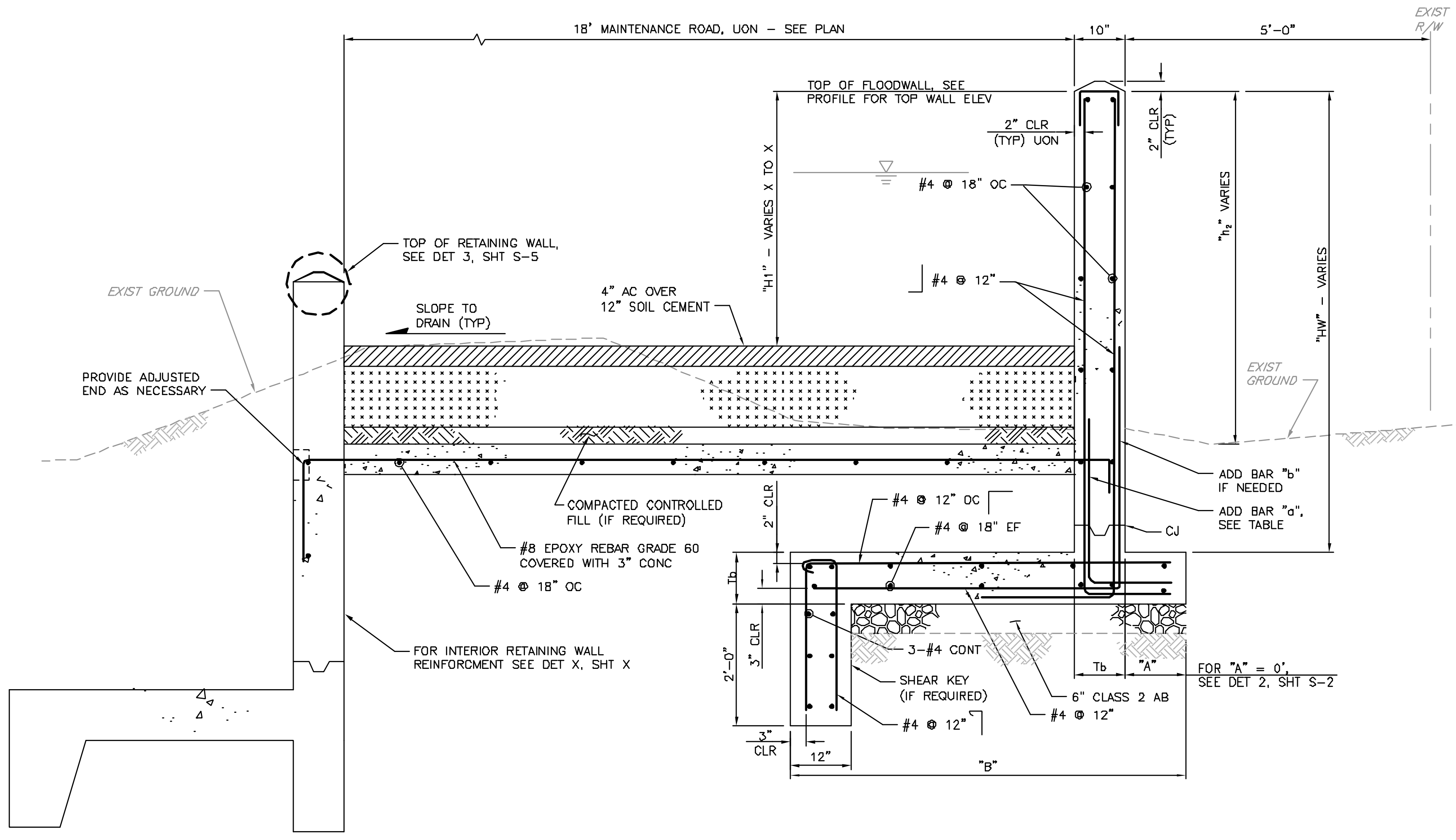
LOWER BERRYESSA CREEK PROJECT

FLOODWALL DETAILS

SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

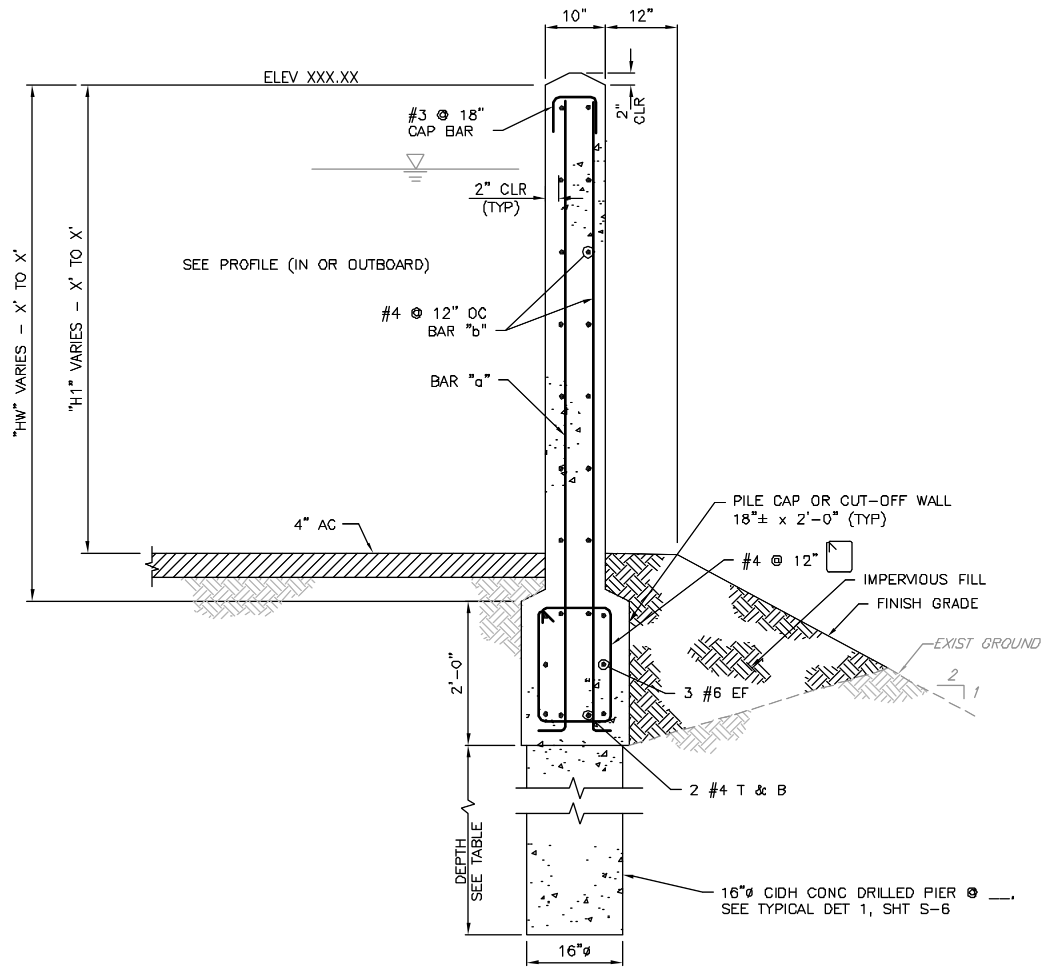
PROJECT NUMBER: 40174004
SHEET CODE: S-2
SHEET NUMBER: 45 OF 76

DOCUMENT NUMBER: BER_CY-S-4017-XXXXX


18' MAINTENANCE ROAD, UON – SEE PLAN
10"
5'-0"
EXIST R/W
TOP OF FLOODWALL, SEE PROFILE FOR TOP WALL ELEV
2" CLR (TYP) UON
2" CLR (TYP)
#4 @ 18" OC
"H1" – VARIES X TO X
"h2" VARIES
"HW" – VARIES
TOP OF RETAINING WALL, SEE DET 3, SHT S-5
EXIST GROUND
#4 @ 12"
4" AC OVER 12" SOIL CEMENT
SLOPE TO DRAIN (TYP)
PROVIDE ADJUSTED END AS NECESSARY
EXIST GROUND
ADD BAR "b" IF NEEDED
ADD BAR "a", SEE TABLE
CJ
COMPACTED CONTROLLED FILL (IF REQUIRED)
#4 @ 12" OC
#4 @ 18" EF
#8 EPOXY REBAR GRADE 60 COVERED WITH 3" CONC
#4 @ 18" OC
2" CLR
Tb
2'-0"
3" CLR
3-#4 CONT
SHEAR KEY (IF REQUIRED)
6" CLASS 2 AB
#4 @ 12"
#4 @ 12"
Tb
"A"
FOR "A" = 0', SEE DET 2, SHT S-2
FOR INTERIOR RETAINING WALL REINFORCMENT SEE DET X, SHT X
3" CLR
12"
"B"

DETAIL 1/– TYPE 3A FLOODWALL AT MAINTENANCE RAMP WITH TIE BACK, SEE TABLE 3A

SCALE: 3/4" = 1'-0"



DETAIL 2/– TYPE 4 FLOODWALL ON 16"ø CIDH (NEAR RESIDENTIAL AREA OR TOP OF CHANNEL), SEE TABLE 4

SCALE: 3/4" = 1'-0"

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE
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DESIGN
M.T. NGUYEN
DRAWN
D.BETTENDORF
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER
MINH-TRI NGUYEN
No. 25260
Exp. 12/31/11
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:
LOWER BERRYESSA CREEK PROJECT
FLOODWALL DETAILS

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
S-3
SHEET NUMBER:
46 OF 76

DOCUMENT NUMBER: BER_CY-S-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 08:21am
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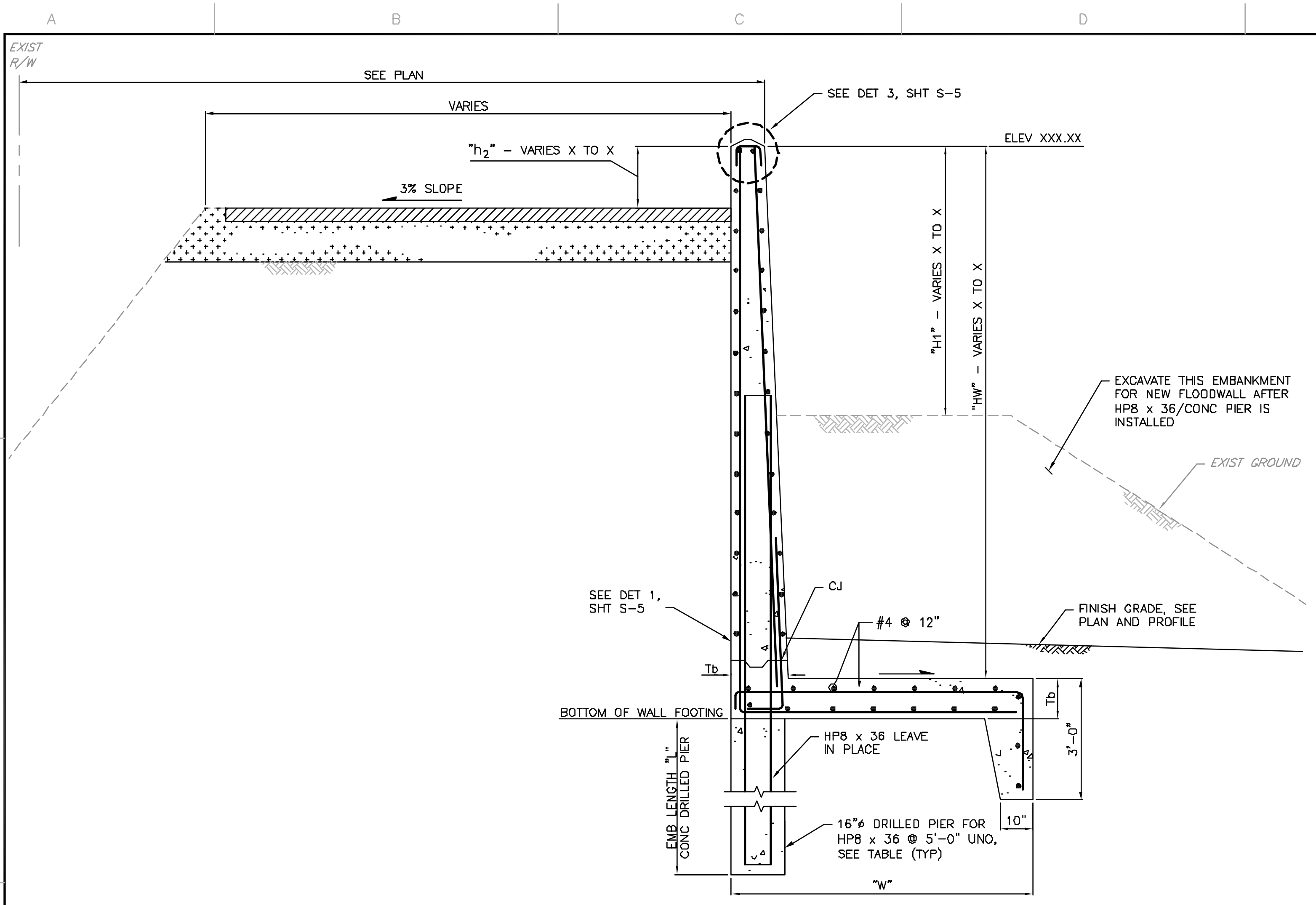
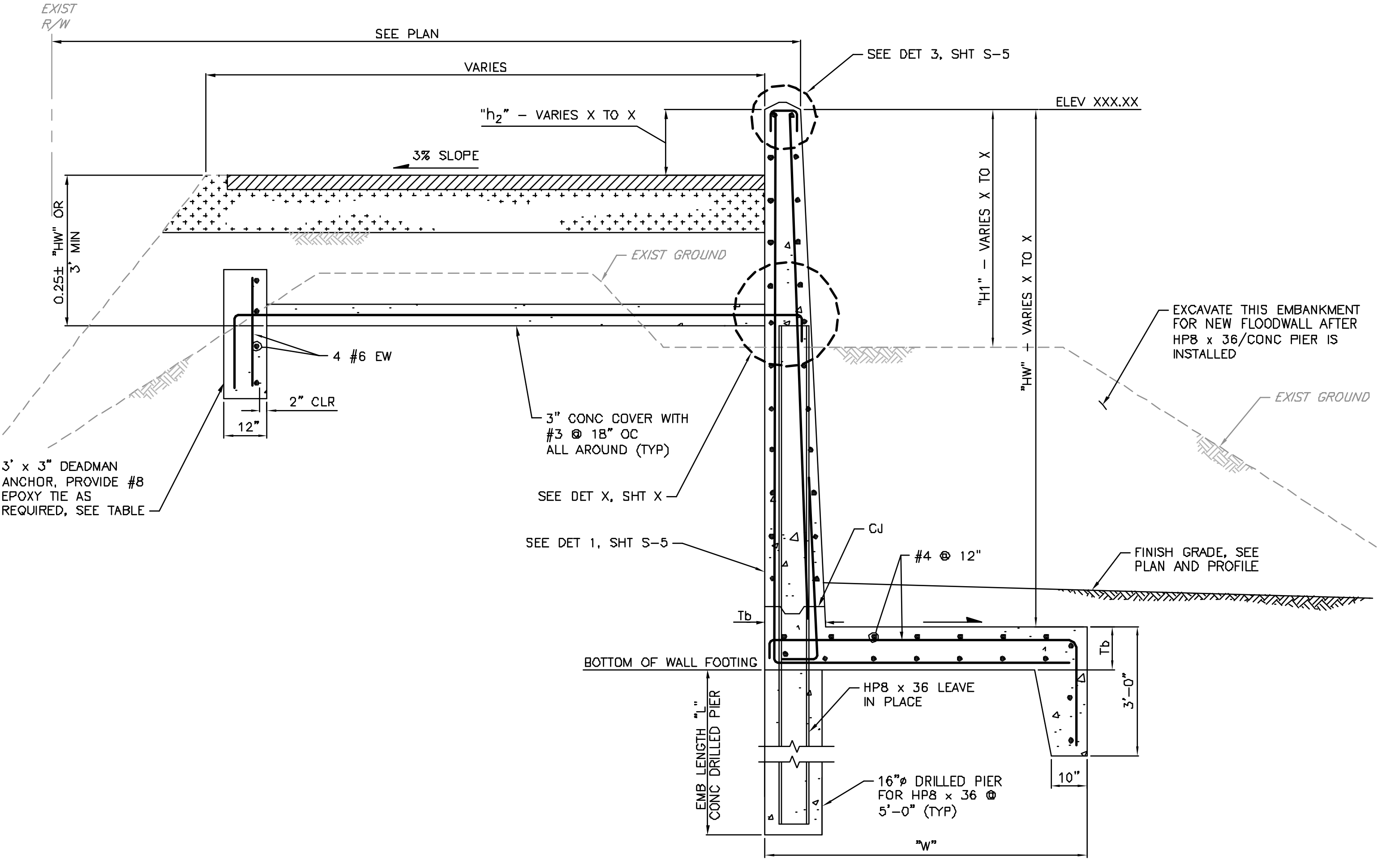
USERNAME: jennford Wed 06 Jul 2011 09:26am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\S-04



DETAIL 1/– **TYPE 5 FLOODWALL/SOLDIER PILE WITHOUT DEADMAN TIE, SEE TABLE 5**
SCALE: 1/2" = 1'-0"


EXIST R/W
SEE PLAN
VARIES
SEE DET 3, SHT S-5
ELEV XXX.XX
"h2" – VARIES X TO X
3% SLOPE
0.25± "HW" OR 3' MIN
EXIST GROUND
"H1" – VARIES X TO X
"HW" – VARIES X TO X
EXCAVATE THIS EMBANKMENT FOR NEW FLOODWALL AFTER HP8 x 36/CONC PIER IS INSTALLED
EXIST GROUND
4 #6 EW
2" CLR
12"
3" CONC COVER WITH #3 @ 18" OC ALL AROUND (TYP)
3' x 3" DEADMAN ANCHOR, PROVIDE #8 EPOXY TIE AS REQUIRED, SEE TABLE
SEE DET X, SHT X
SEE DET 1, SHT S-5
CJ
#4 @ 12"
FINISH GRADE, SEE PLAN AND PROFILE
Tb
Tb
BOTTOM OF WALL FOOTING
3'-0"
HP8 x 36 LEAVE IN PLACE
EMB LENGTH "L" CONC DRILLED PIER
10"
16"ø DRILLED PIER FOR HP8 x 36 @ 5'-0" (TYP)
"W"

DETAIL 2/– **TYPE 5A FLOODWALL/SOLDIER PILE WITH DEADMAN TIE, SEE TABLE 5A**
SCALE: 1/2" = 1'-0"

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE	
JUNE 2011	
DESIGN	M.T. NGUYEN
DRAWN	D.BETTENDORF
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
MINH-TRI NGUYEN No. 25260 Exp. 12/31/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

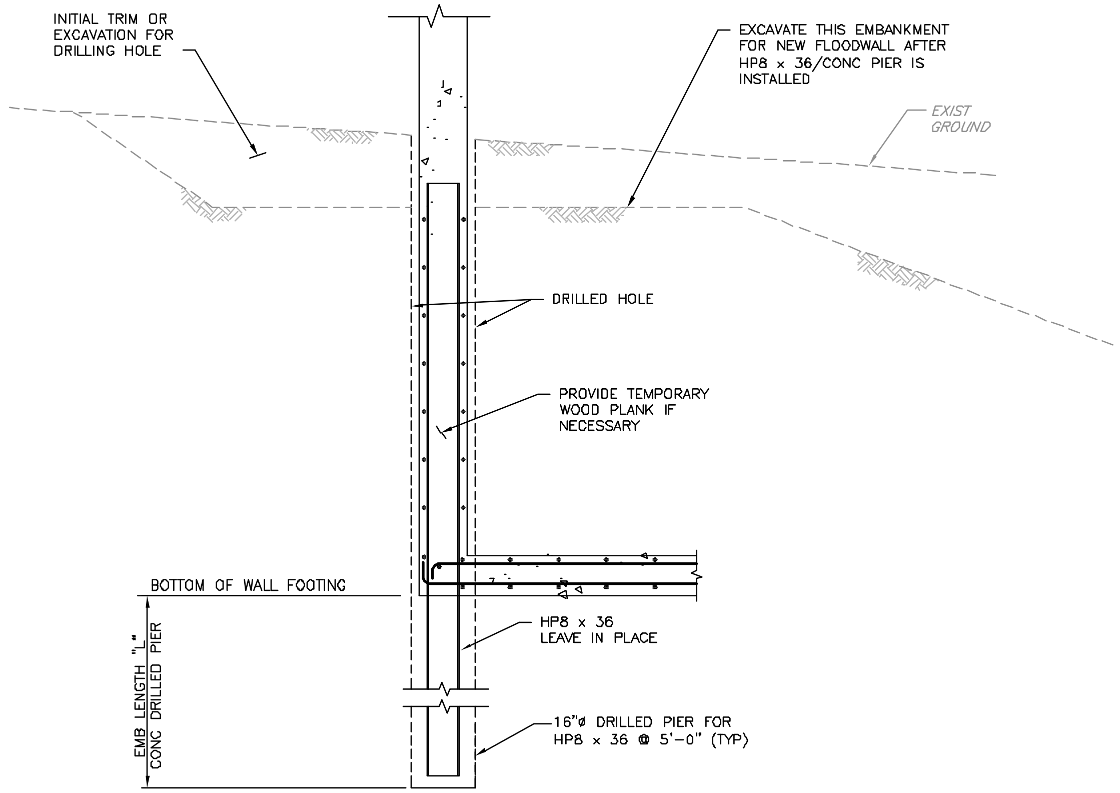
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

TYPE 5 AND 5A FLOODWALL DETAIL

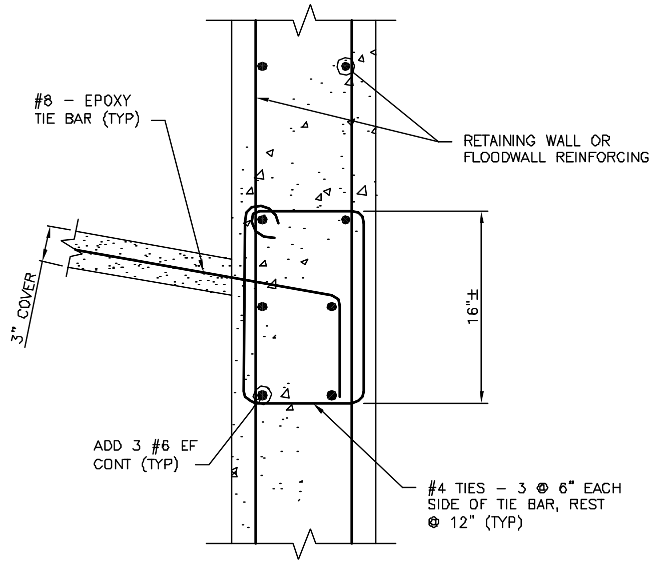
SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: S-4
SHEET NUMBER: 47 OF 76


INITIAL TRIM OR EXCAVATION FOR DRILLING HOLE
EXCAVATE THIS EMBANKMENT FOR NEW FLOODWALL AFTER HP8 x 36/CONC PIER IS INSTALLED
EXIST GROUND
DRILLED HOLE
PROVIDE TEMPORARY WOOD PLANK IF NECESSARY
BOTTOM OF WALL FOOTING
EMB LENGTH "L" CONC DRILLED PIER
HP8 x 36 LEAVE IN PLACE
16"ø DRILLED PIER FOR HP8 x 36 @ 5'-0" (TYP)

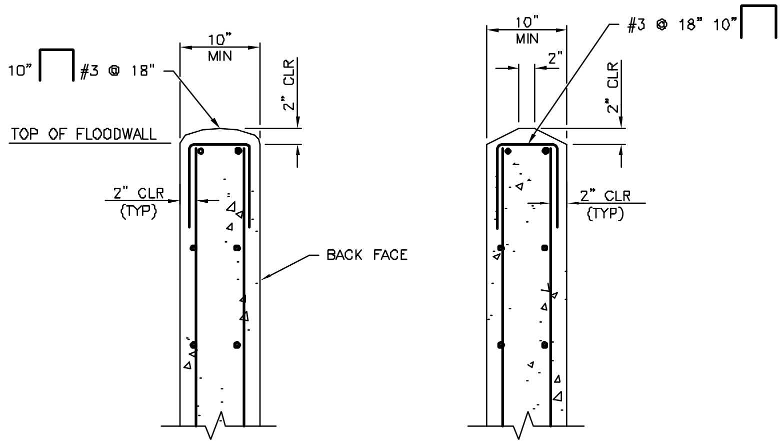
DETAIL 1/– TYPICAL SOLDIER PILE LEAVE IN PLACE FOR TEMPORARY OR PERMANENT SHORING

SCALE: 1/2" = 1'-0"


#8 - EPOXY TIE BAR (TYP)
3" COVER
RETAINING WALL OR FLOODWALL REINFORCING
16"±
ADD 3 #6 EF CONT (TYP)
#4 TIES - 3 @ 6" EACH SIDE OF TIE BAR, REST @ 12" (TYP)

DETAIL 2/– TYPICAL BEAM REINFORCEMENT AT WALL/TIE BAR

SCALE: 1 1/2" = 1'-0"

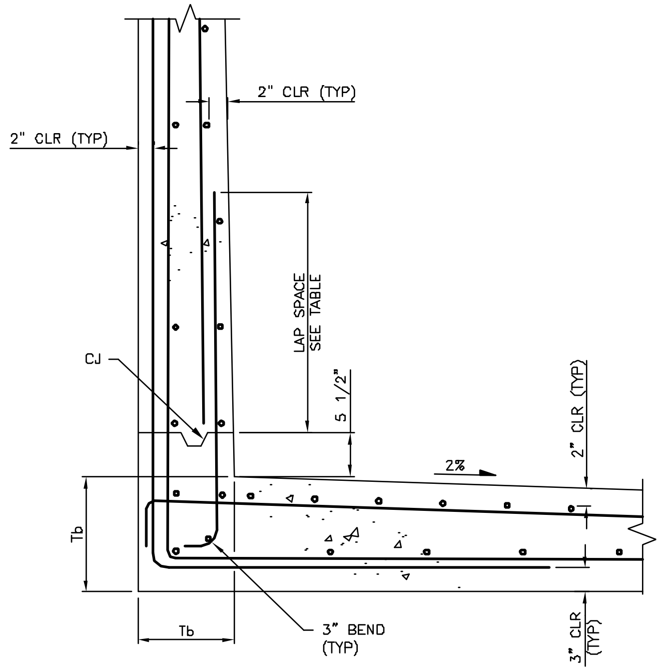


CURVED TOP

TAPERED TOP

DETAIL 3/– TYPICAL TOP OF WALL

SCALE: 1" = 1'-0"



DETAIL 4/– CONSTRUCTION JOINT AT BOTTOM WALL AND FOOTING

SCALE: 1" = 1'-0"

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE: JUNE 2011
DESIGN: M.T. NGUYEN
DRAWN: D.BETTENDORF
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
MINH-TRI NGUYEN
No. 25280
Exp. 12/31/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

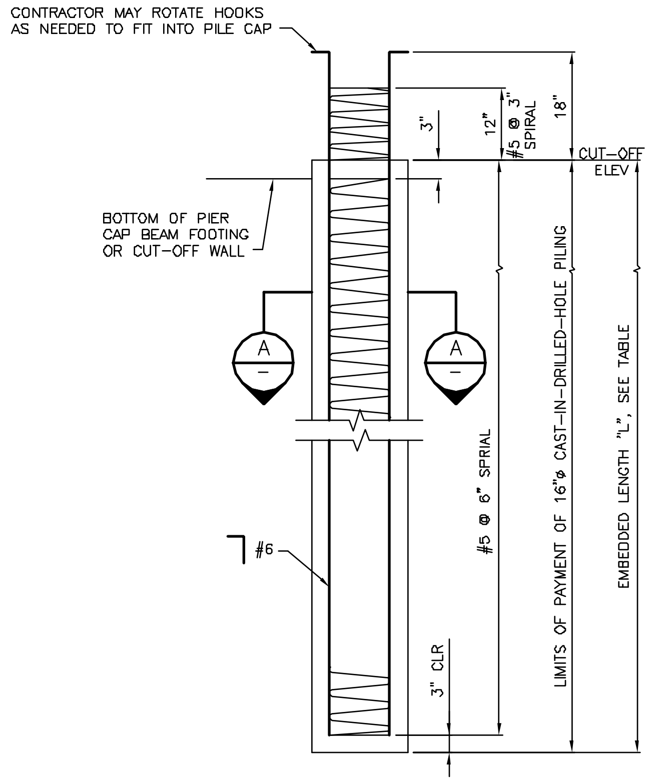
LOWER BERRYESSA CREEK PROJECT

FLOODWALL DETAILS

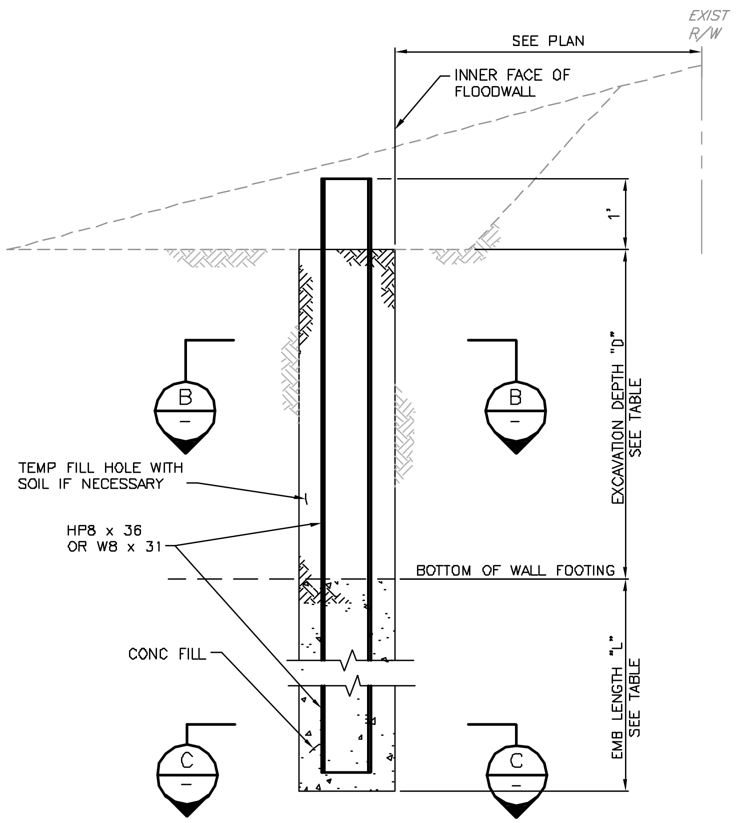
SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: S-5
SHEET NUMBER: 48 OF 76

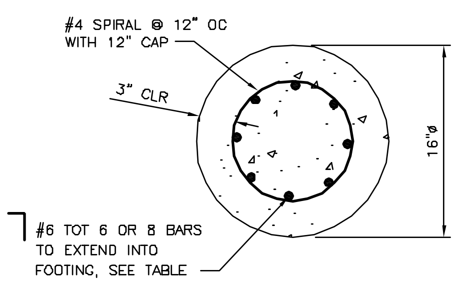
USERNAME: jennford Wed 06 Jul 2011 09:29am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\S-06


CONTRACTOR MAY ROTATE HOOKS AS NEEDED TO FIT INTO PILE CAP
BOTTOM OF PIER CAP BEAM FOOTING OR CUT-OFF WALL
A
A
#6
3" CLR
3"
12"
#5 @ 3" SPIRAL
18"
CUT-OFF ELEV
#5 @ 6" SPRIAL
LIMITS OF PAYMENT OF 16"ø CAST-IN-DRILLED-HOLE PILING
EMBEDDED LENGTH "L", SEE TABLE

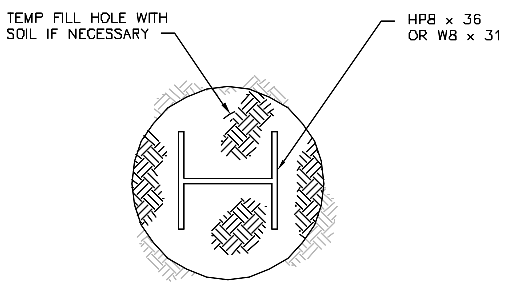
DETAIL 1/– **TYPICAL 16"ø CIDH PILE**
SCALE: 1" = 1'-0'



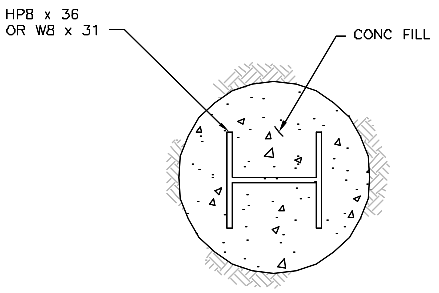
DETAIL 2/– **TYPICAL 16"ø CIDH AND SOLDIER PILE TEMPORARY/PERMANENT SHORING**
SCALE: 1" = 1'-0"


#4 SPIRAL @ 12" OC WITH 12" CAP
3" CLR
16"ø
#6 TOT 6 OR 8 BARS TO EXTEND INTO FOOTING, SEE TABLE

SECTION A/– **CIDH PILE**
SCALE: 1 1/2" = 1'-0"



SECTION B/–
SCALE: 1 1/2" = 1'-0"



SECTION C/–
SCALE: 1 1/2" = 1'-0"

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	60% PRELIMINARY 06-24-11			

DATE: JUNE 2011
DESIGN: M.T. NGUYEN
DRAWN: D.BETTENDORF
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
MINH-TRI NGUYEN
No. 25280
Exp. 12/31/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

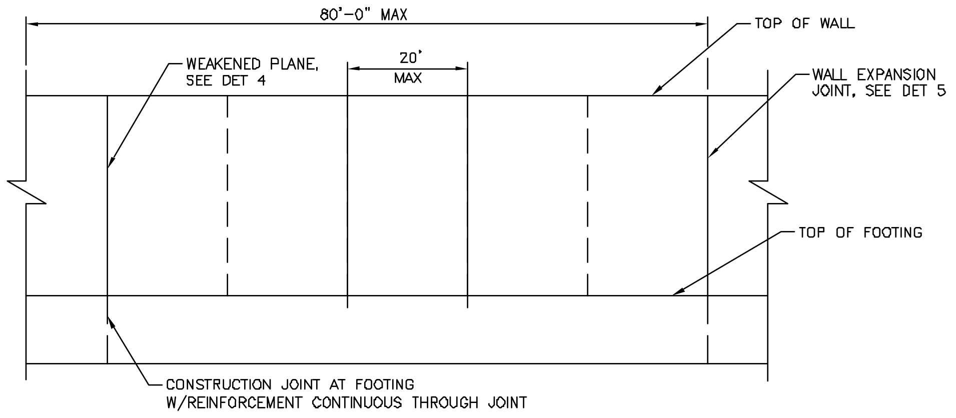
LOWER BERRYESSA CREEK PROJECT

FLOODWALL
DETAILS AND SECTIONS

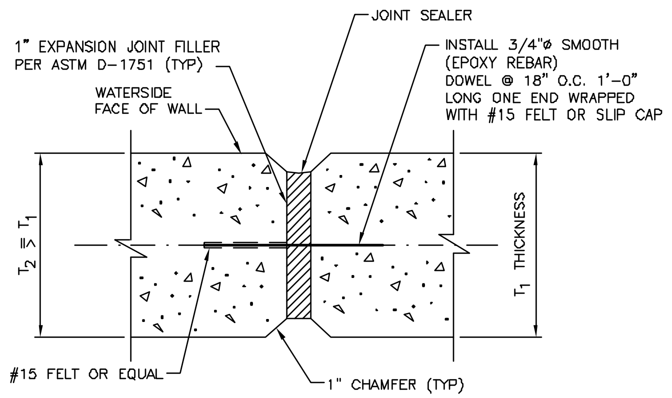
SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: S-6
SHEET NUMBER: 49 OF 76

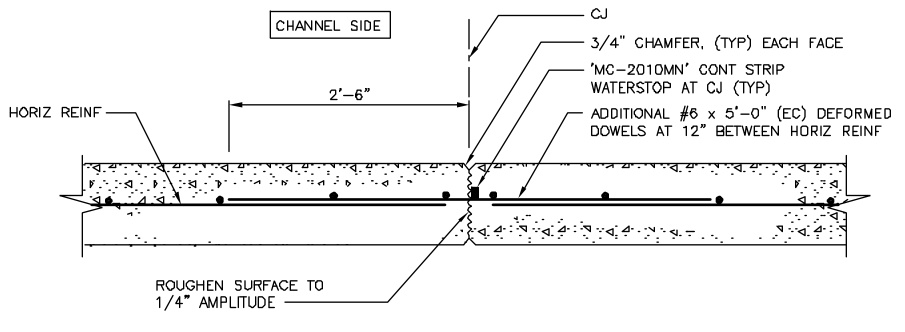
DOCUMENT NUMBER: BER_CY-S-4017-XXXXX


80'-0" MAX
20' MAX
TOP OF WALL
WEAKENED PLANE, SEE DET 4
WALL EXPANSION JOINT, SEE DET 5
TOP OF FOOTING
CONSTRUCTION JOINT AT FOOTING W/REINFORCEMENT CONTINUOUS THROUGH JOINT

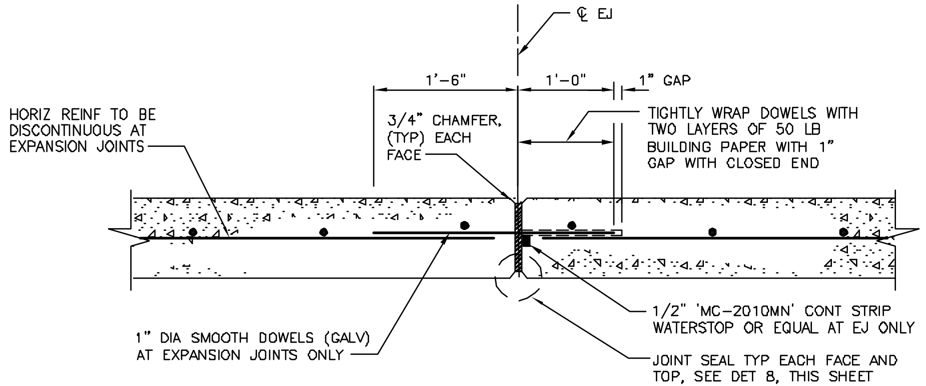
DETAIL 1/– FLOODWALL, WALL EXPANSION JOINTS AND WEAKENED PLANES
SCALE: NOT TO SCALE


1" EXPANSION JOINT FILLER PER ASTM D-1751 (TYP)
WATERSIDE FACE OF WALL
JOINT SEALER
INSTALL 3/4"ø SMOOTH (EPOXY REBAR) DOWEL @ 18" O.C. 1'-0" LONG ONE END WRAPPED WITH #15 FELT OR SLIP CAP
T2 ≥ T1
T1 THICKNESS
#15 FELT OR EQUAL
1" CHAMFER (TYP)

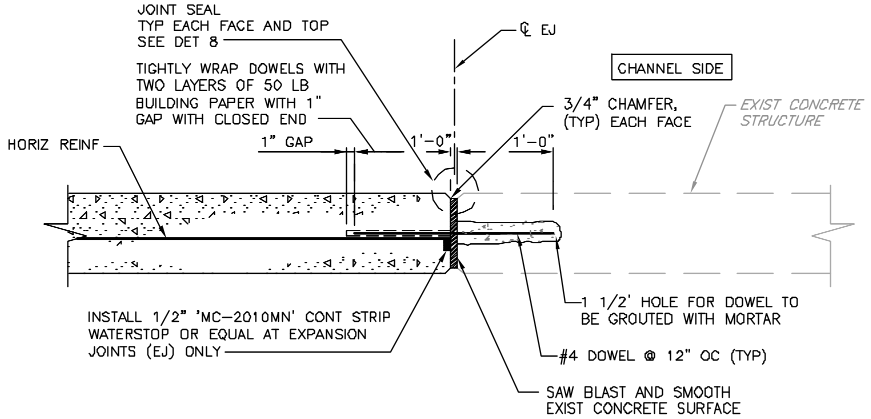
DETAIL 2/– WALL EXPANSION JOINT
SCALE: NOT TO SCALE


CHANNEL SIDE
CJ
3/4" CHAMFER, (TYP) EACH FACE
'MC-2010MN' CONT STRIP WATERSTOP AT CJ (TYP)
ADDITIONAL #6 x 5'-0" (EC) DEFORMED DOWELS AT 12" BETWEEN HORIZ REINF
HORIZ REINF
2'-6"
ROUGHEN SURFACE TO 1/4" AMPLITUDE

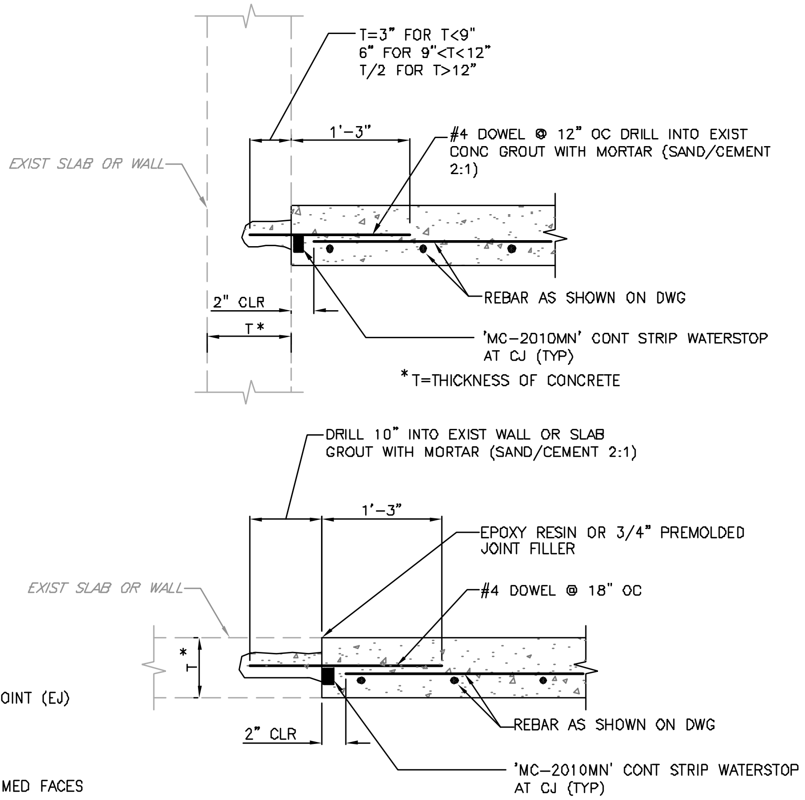
DETAIL 3/– CONSTRUCTION JOINT BETWEEN NEW CONCRETE MEMBERS
SCALE: 1" = 1'-0"


℄ EJ
1'-6"
1'-0"
1" GAP
HORIZ REINF TO BE DISCONTINUOUS AT EXPANSION JOINTS
3/4" CHAMFER, (TYP) EACH FACE
TIGHTLY WRAP DOWELS WITH TWO LAYERS OF 50 LB BUILDING PAPER WITH 1" GAP WITH CLOSED END
1/2" 'MC-2010MN' CONT STRIP WATERSTOP OR EQUAL AT EJ ONLY
1" DIA SMOOTH DOWELS (GALV) AT EXPANSION JOINTS ONLY
JOINT SEAL TYP EACH FACE AND TOP, SEE DET 8, THIS SHEET

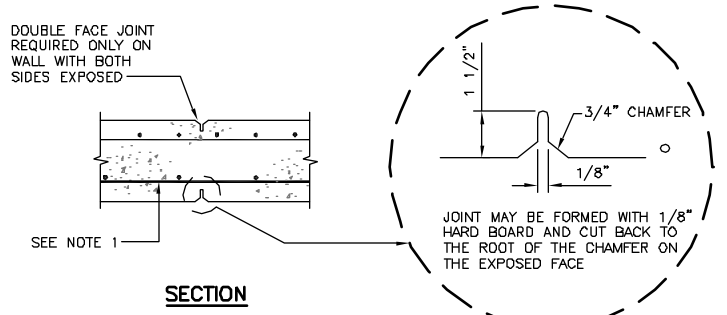
DETAIL 4/– EXPANSION JOINT BETWEEN NEW CONCRETE MEMBERS
SCALE: 1" = 1'-0"


JOINT SEAL TYP EACH FACE AND TOP SEE DET 8
TIGHTLY WRAP DOWELS WITH TWO LAYERS OF 50 LB BUILDING PAPER WITH 1" GAP WITH CLOSED END
℄ EJ
CHANNEL SIDE
3/4" CHAMFER, (TYP) EACH FACE
EXIST CONCRETE STRUCTURE
HORIZ REINF
1" GAP
1'-0"
1'-0"
INSTALL 1/2" 'MC-2010MN' CONT STRIP WATERSTOP OR EQUAL AT EXPANSION JOINTS (EJ) ONLY
1 1/2' HOLE FOR DOWEL TO BE GROUTED WITH MORTAR
#4 DOWEL @ 12" OC (TYP)
SAW BLAST AND SMOOTH EXIST CONCRETE SURFACE

DETAIL 5/– EXPANSION JOINT TO EXISTING CONCRETE MEMBERS
SCALE: 1" = 1'-0"


T=3" FOR T<9"
6" FOR 9"<T<12"
T/2 FOR T>12"
EXIST SLAB OR WALL
1'-3"
#4 DOWEL @ 12" OC DRILL INTO EXIST CONC GROUT WITH MORTAR (SAND/CEMENT 2:1)
2" CLR
T*
REBAR AS SHOWN ON DWG
'MC-2010MN' CONT STRIP WATERSTOP AT CJ (TYP)
*T=THICKNESS OF CONCRETE
DRILL 10" INTO EXIST WALL OR SLAB GROUT WITH MORTAR (SAND/CEMENT 2:1)
1'-3"
EPOXY RESIN OR 3/4" PREMOLDED JOINT FILLER
#4 DOWEL @ 18" OC
EXIST SLAB OR WALL
T*
2" CLR
REBAR AS SHOWN ON DWG
'MC-2010MN' CONT STRIP WATERSTOP AT CJ (TYP)

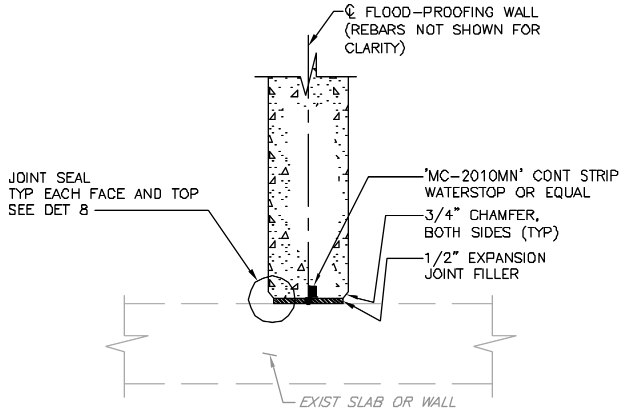
DETAIL 6/S-5 CONSTRUCTION JOINT TO EXISTING CONCRETE
SCALE: NOT TO SCALE


DOUBLE FACE JOINT REQUIRED ONLY ON WALL WITH BOTH SIDES EXPOSED
SEE NOTE 1
1 1/2"
3/4" CHAMFER
1/8"
JOINT MAY BE FORMED WITH 1/8" HARD BOARD AND CUT BACK TO THE ROOT OF THE CHAMFER ON THE EXPOSED FACE

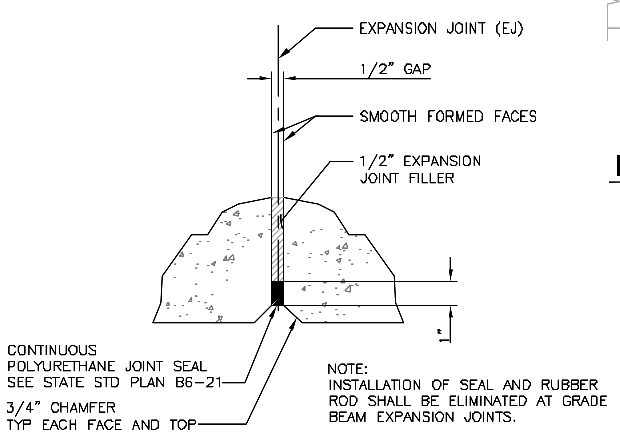
SECTION

NOTE:
1. CUT OR BUTT EVERY OTHER HOIZONTAL BAR WHERE THE CHANNEL WALL FACE IS EXPOSED.

DETAIL 7/– CONTRACTION OR WEAKENED PLANE JOINT
SCALE: NOT TO SCALE

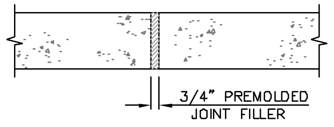

℄ FLOOD-PROOFING WALL (REBARS NOT SHOWN FOR CLARITY)
JOINT SEAL TYP EACH FACE AND TOP SEE DET 8
'MC-2010MN' CONT STRIP WATERSTOP OR EQUAL
3/4" CHAMFER, BOTH SIDES (TYP)
1/2" EXPANSION JOINT FILLER
EXIST SLAB OR WALL

DETAIL 8/– EXPANSION JOINT WITH WATERSTOP FLOOD-PROOFING WALL TO EXISTING WALL
SCALE: NOT TO SCALE


EXPANSION JOINT (EJ)
1/2" GAP
SMOOTH FORMED FACES
1/2" EXPANSION JOINT FILLER
CONTINUOUS POLYURETHANE JOINT SEAL SEE STATE STD PLAN B6-21
3/4" CHAMFER TYP EACH FACE AND TOP

NOTE:
INSTALLATION OF SEAL AND RUBBER ROD SHALL BE ELIMINATED AT GRADE BEAM EXPANSION JOINTS.

DETAIL 9/– TYPICAL JOINT SEAL @ EXPANSION JOINT
SCALE: NOT TO SCALE



DETAIL 10/– SETTLEMENT JOINT
SCALE: NOT TO SCALE

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DESIGN: M.T. NGUYEN
DRAWN: D.BETTENDORF
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
MINH-TRI NGUYEN
No. 25260
Exp. 12/31/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT
FLOODWALL DETAILS AND SECTIONS

SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: S-7
SHEET NUMBER: 50 OF 76

USERNAME: jennford Wed 06 Jul 2011 09:30am
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REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE	JUNE 2011
DESIGN	M.T. NGUYEN
DRAWN	D.BETTENDORF
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

MINH-TRI NGUYEN
No. 25260
Exp. 12/31/11
CIVIL

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

HEADWALL DETAILS

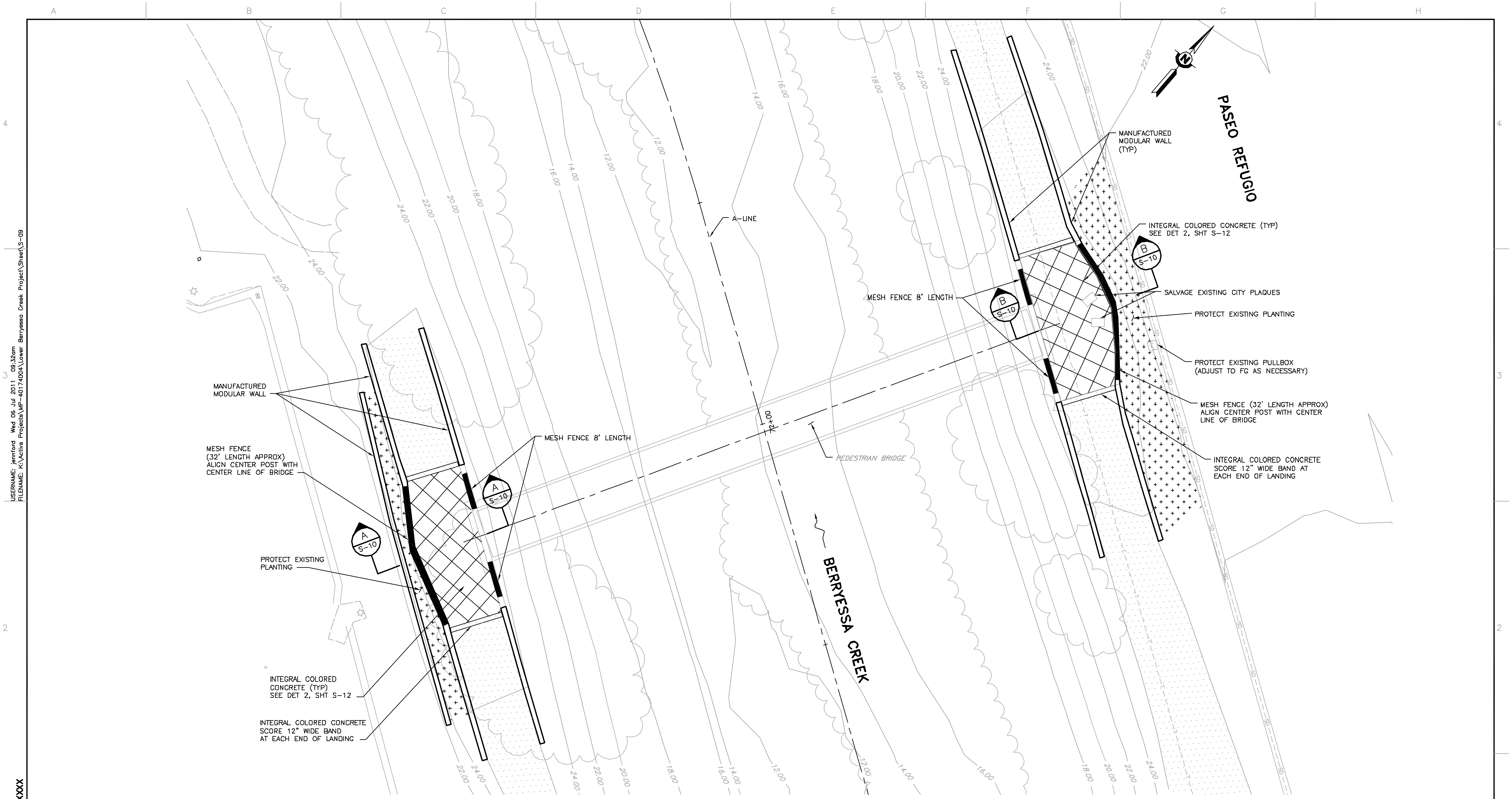
SCALE
AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
4017404

SHEET CODE:
S-8

SHEET NUMBER:
51 OF 76


PASEO REFUGIO
N
MANUFACTURED MODULAR WALL (TYP)
INTEGRAL COLORED CONCRETE (TYP) SEE DET 2, SHT S-12
B S-10
SALVAGE EXISTING CITY PLAQUES
PROTECT EXISTING PLANTING
PROTECT EXISTING PULLBOX (ADJUST TO FG AS NECESSARY)
MESH FENCE (32' LENGTH APPROX) ALIGN CENTER POST WITH CENTER LINE OF BRIDGE
INTEGRAL COLORED CONCRETE SCORE 12" WIDE BAND AT EACH END OF LANDING
MESH FENCE 8' LENGTH
A-LINE
2+00
PEDESTRIAN BRIDGE
BERRYESSA CREEK
MANUFACTURED MODULAR WALL
MESH FENCE (32' LENGTH APPROX) ALIGN CENTER POST WITH CENTER LINE OF BRIDGE
MESH FENCE 8' LENGTH
A S-10
PROTECT EXISTING PLANTING
INTEGRAL COLORED CONCRETE (TYP) SEE DET 2, SHT S-12
INTEGRAL COLORED CONCRETE SCORE 12" WIDE BAND AT EACH END OF LANDING
24.00
22.00
20.00
18.00
16.00
14.00
12.00
SD

DETAIL 1 / – **PEDESTRIAN BRIDGE PLAN**

SCALE: 1" = 10'

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE: JUNE 2011
DESIGN: X.X.X.
DRAWN: J. FORD
CHECKED: X.X.X.

ENGINEERING CERTIFICATION

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

PEDESTRIAN BRIDGE PLAN DETAIL

SCALE: AS SHOWN

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004

SHEET CODE: S-9

SHEET NUMBER: 52 OF 76

DOCUMENT NUMBER: BER_CY-S-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 09:32am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\S-09

USERNAME: jennford Wed 06 Jul 2011 09:33am
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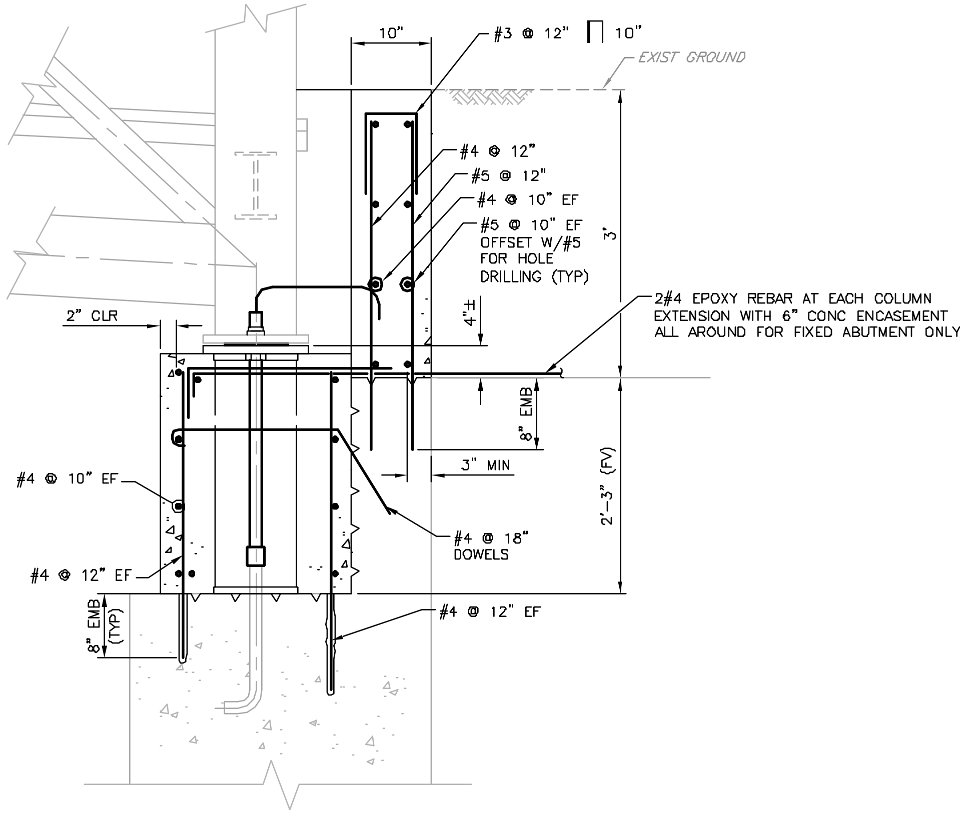
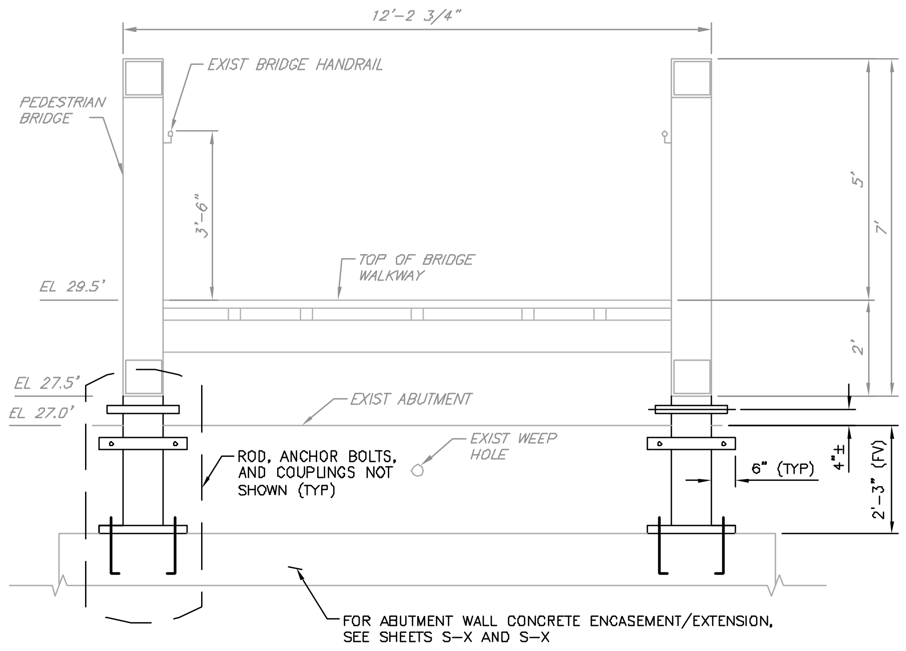


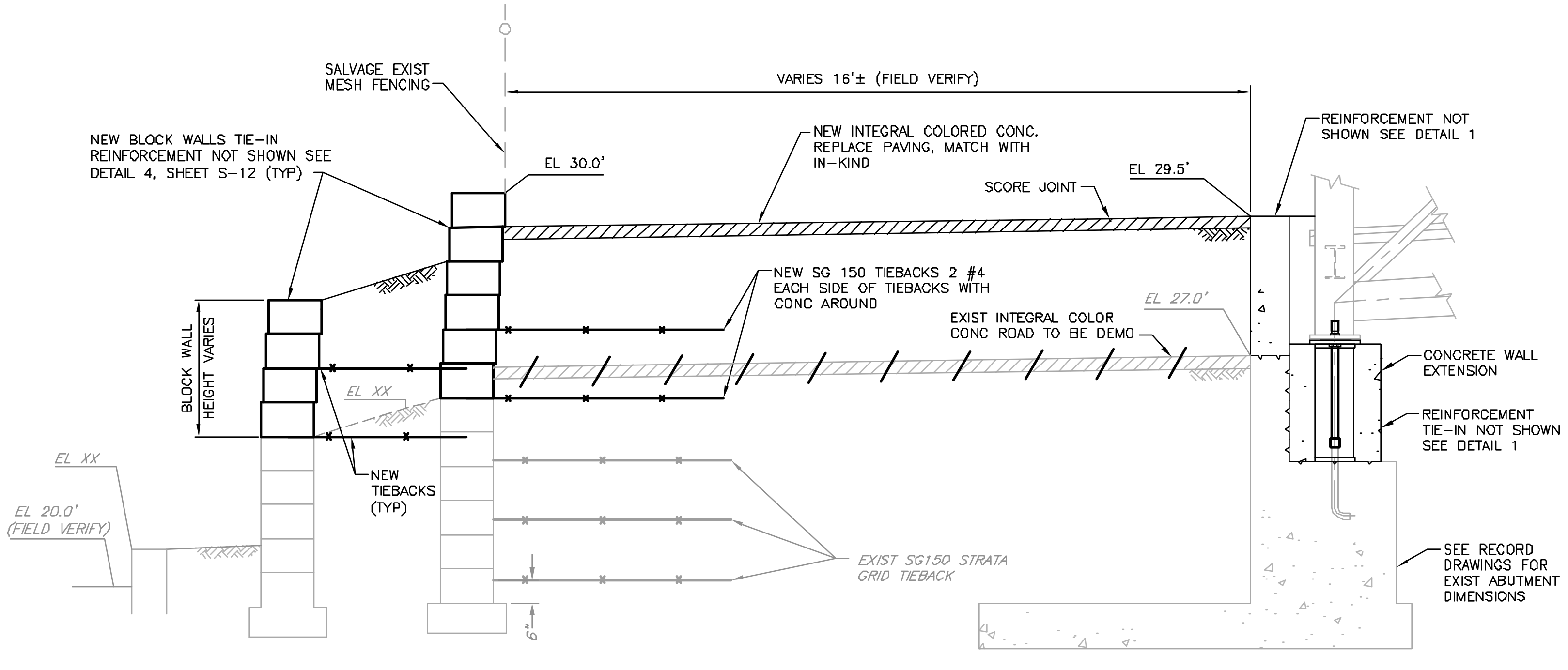
DETAIL (1/–) BRIDGE ABUTMENT FOUNDATION AFTER INSTALLATION

SCALE: 1" = 1'-0"



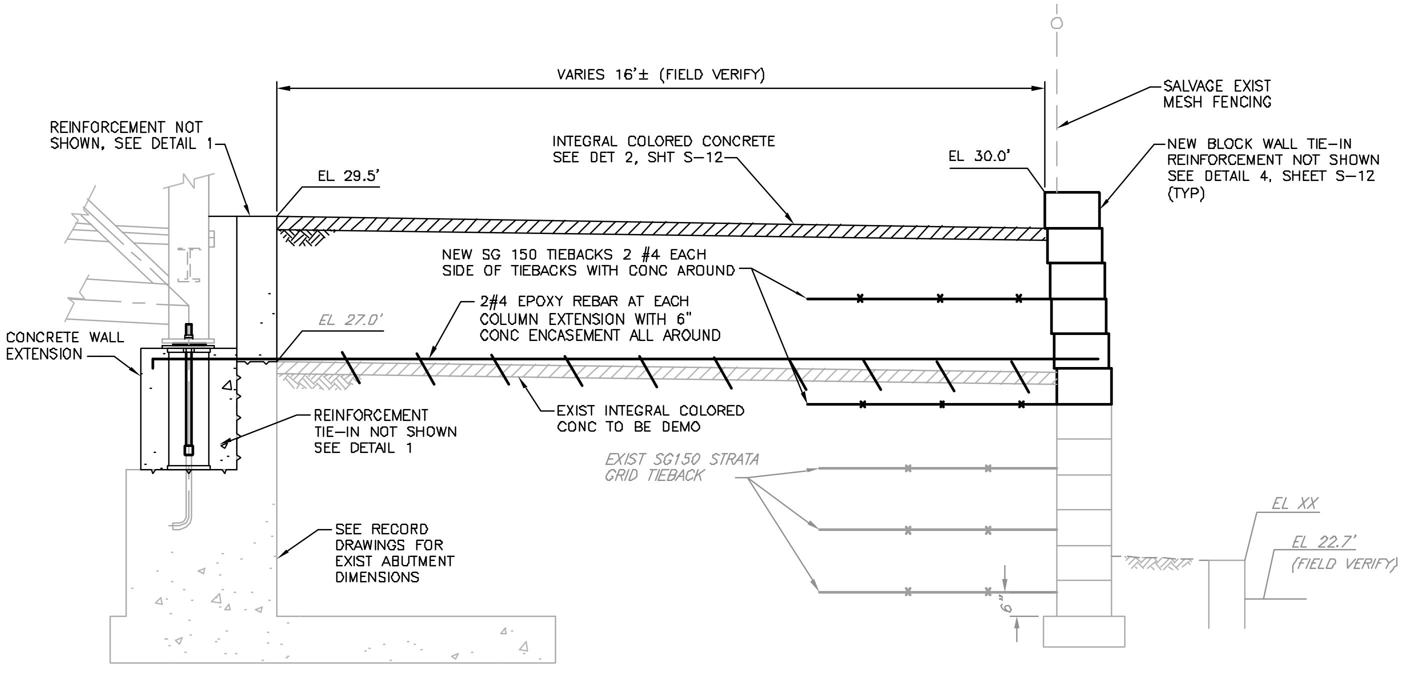
TYPICAL SECTION (A/–) PEDESTRIAN BRIDGE AT ABUTMENT

SCALE: 1/2" = 1'-0"


SALVAGE EXIST MESH FENCING
VARIES 16'± (FIELD VERIFY)
NEW BLOCK WALLS TIE-IN REINFORCEMENT NOT SHOWN SEE DETAIL 4, SHEET S-12 (TYP)
EL 30.0'
NEW INTEGRAL COLORED CONC. REPLACE PAVING, MATCH WITH IN-KIND
SCORE JOINT
EL 29.5'
REINFORCEMENT NOT SHOWN SEE DETAIL 1
NEW SG 150 TIEBACKS 2 #4 EACH SIDE OF TIEBACKS WITH CONC AROUND
EXIST INTEGRAL COLOR CONC ROAD TO BE DEMO
EL 27.0'
BLOCK WALL HEIGHT VARIES
EL XX
CONCRETE WALL EXTENSION
REINFORCEMENT TIE-IN NOT SHOWN SEE DETAIL 1
EL XX
NEW TIEBACKS (TYP)
EL 20.0' (FIELD VERIFY)
EXIST SG150 STRATA GRID TIEBACK
SEE RECORD DRAWINGS FOR EXIST ABUTMENT DIMENSIONS
6"

SECTION (A/S-9) SOUTH END SLIDING ABUTMENT OF PEDESTRIAN BRIDGE

SCALE: 1" = 2'-0"


VARIES 16'± (FIELD VERIFY)
SALVAGE EXIST MESH FENCING
REINFORCEMENT NOT SHOWN, SEE DETAIL 1
INTEGRAL COLORED CONCRETE SEE DET 2, SHT S-12
EL 30.0'
NEW BLOCK WALL TIE-IN REINFORCEMENT NOT SHOWN SEE DETAIL 4, SHEET S-12 (TYP)
EL 29.5'
NEW SG 150 TIEBACKS 2 #4 EACH SIDE OF TIEBACKS WITH CONC AROUND
2#4 EPOXY REBAR AT EACH COLUMN EXTENSION WITH 6" CONC ENCASEMENT ALL AROUND
EL 27.0'
CONCRETE WALL EXTENSION
REINFORCEMENT TIE-IN NOT SHOWN SEE DETAIL 1
EXIST INTEGRAL COLORED CONC TO BE DEMO
EXIST SG150 STRATA GRID TIEBACK
SEE RECORD DRAWINGS FOR EXIST ABUTMENT DIMENSIONS
EL XX
EL 22.7' (FIELD VERIFY)
6"

SECTION (B/S-9) NORTH END FIXED ABUTMENT OF PEDESTRIAN BRIDGE

SCALE: 1" = 2'-0"

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DRAWN: R. AGREDA, L. PENILLA
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
MINH-TRI NGUYEN
No. 25260
Exp. 12/31/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

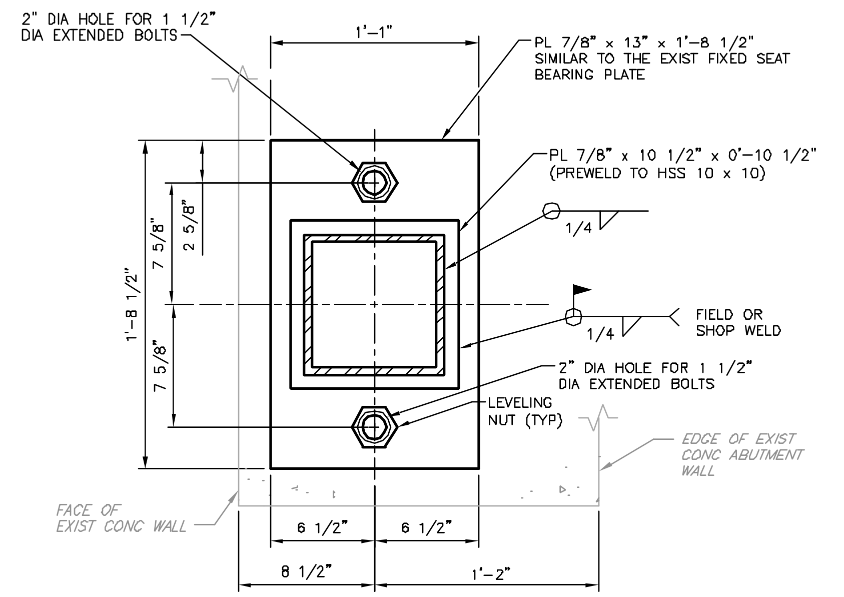
LOWER BERRYESSA CREEK PROJECT

PEDESTRIAN BRIDGE ABUTMENT SECTIONS AND DETAIL

SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

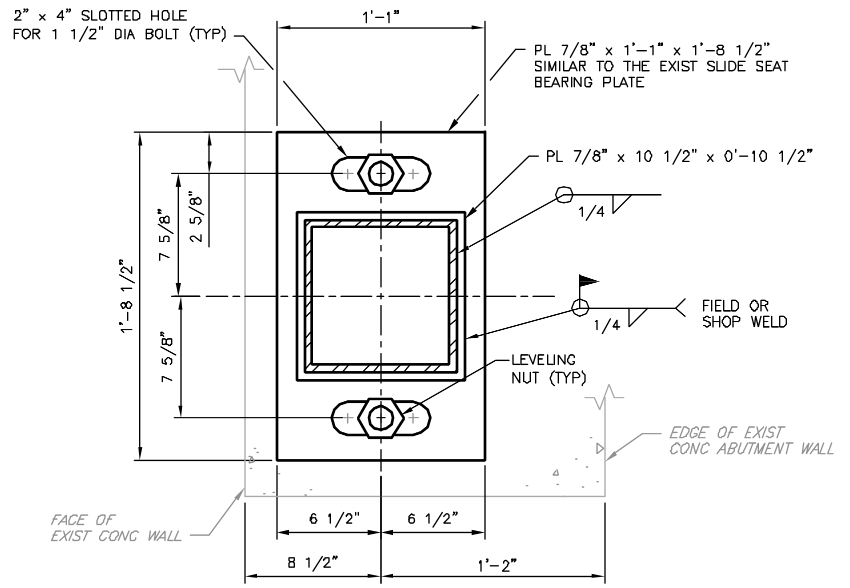
PROJECT NUMBER: 40174004
SHEET CODE: S-10
SHEET NUMBER: 53 OF 76

DOCUMENT NUMBER: BER_CY-S-4017-XXXXX


2" DIA HOLE FOR 1 1/2" DIA EXTENDED BOLTS
1'-1"
PL 7/8" x 13" x 1'-8 1/2" SIMILAR TO THE EXIST FIXED SEAT BEARING PLATE
PL 7/8" x 10 1/2" x 0'-10 1/2" (PREWELD TO HSS 10 x 10)
1/4
FIELD OR SHOP WELD
2" DIA HOLE FOR 1 1/2" DIA EXTENDED BOLTS
LEVELING NUT (TYP)
EDGE OF EXIST CONC ABUTMENT WALL
FACE OF EXIST CONC WALL
1'-8 1/2"
7 5/8"
2 5/8"
7 5/8"
6 1/2"
6 1/2"
8 1/2"
1'-2"

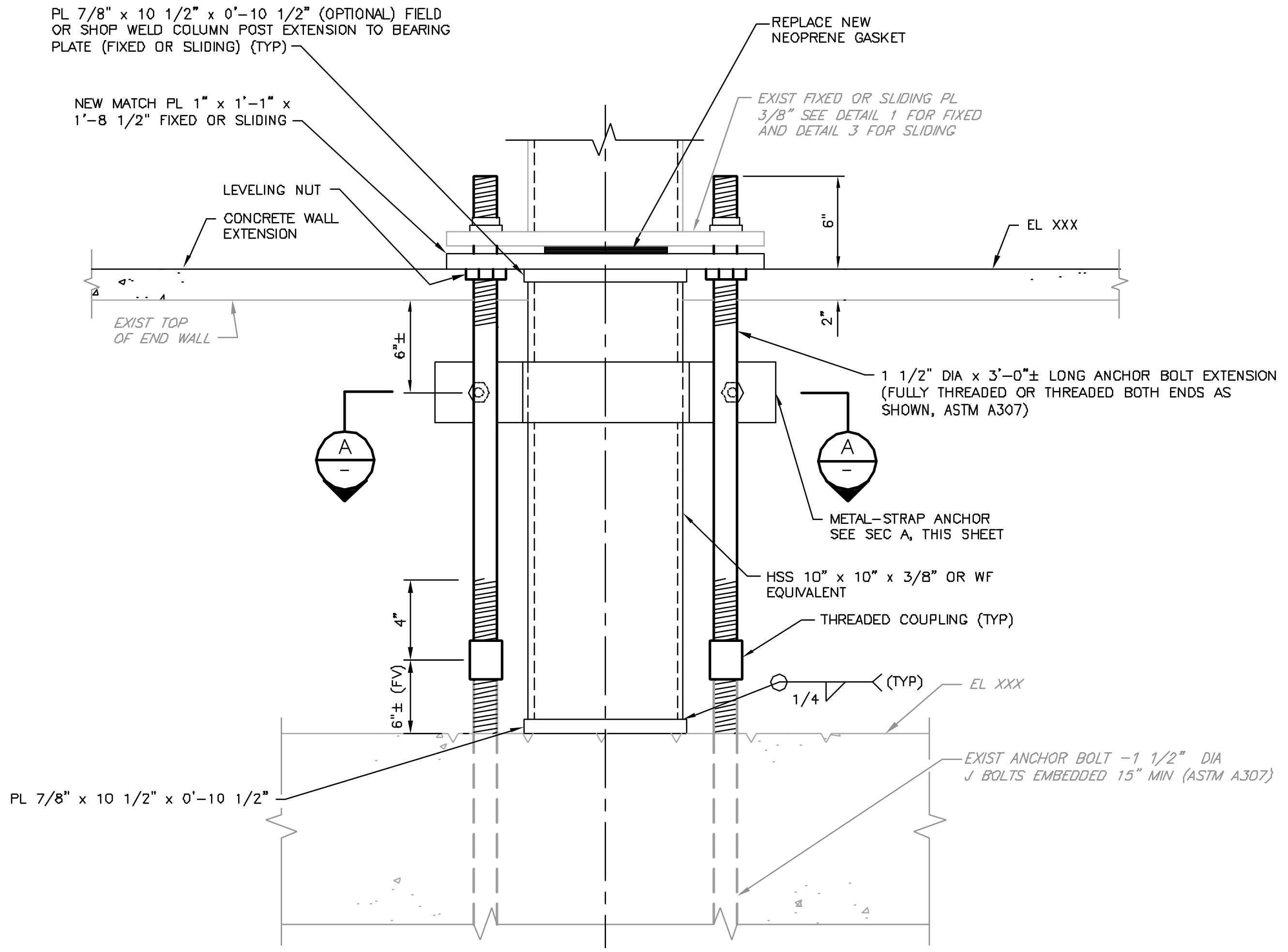
DETAIL 1/– NEW FIXED SEAT BEARING (2 REQUIRED)

SCALE: 1" = 2'-0"


2" x 4" SLOTTED HOLE FOR 1 1/2" DIA BOLT (TYP)
1'-1"
PL 7/8" x 1'-1" x 1'-8 1/2" SIMILAR TO THE EXIST SLIDE SEAT BEARING PLATE
PL 7/8" x 10 1/2" x 0'-10 1/2"
1/4
FIELD OR SHOP WELD
LEVELING NUT (TYP)
EDGE OF EXIST CONC ABUTMENT WALL
FACE OF EXIST CONC WALL
1'-8 1/2"
7 5/8"
2 5/8"
7 5/8"
6 1/2"
6 1/2"
8 1/2"
1'-2"

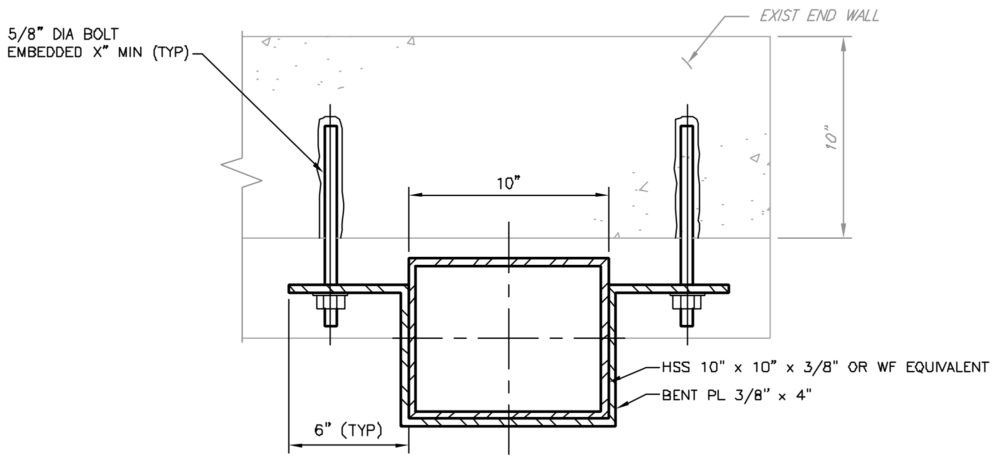
DETAIL 3/– SLIDE SEAT BEARING (2 REQUIRED)

SCALE: 1" = 2'-0"


PL 7/8" x 10 1/2" x 0'-10 1/2" (OPTIONAL) FIELD OR SHOP WELD COLUMN POST EXTENSION TO BEARING PLATE (FIXED OR SLIDING) (TYP)
NEW MATCH PL 1" x 1'-1" x 1'-8 1/2" FIXED OR SLIDING
LEVELING NUT
CONCRETE WALL EXTENSION
EXIST TOP OF END WALL
REPLACE NEW NEOPRENE GASKET
EXIST FIXED OR SLIDING PL 3/8" SEE DETAIL 1 FOR FIXED AND DETAIL 3 FOR SLIDING
6"
EL XXX
2"
6"±
1 1/2" DIA x 3'-0"± LONG ANCHOR BOLT EXTENSION (FULLY THREADED OR THREADED BOTH ENDS AS SHOWN, ASTM A307)
A
–
METAL-STRAP ANCHOR SEE SEC A, THIS SHEET
HSS 10" x 10" x 3/8" OR WF EQUIVALENT
THREADED COUPLING (TYP)
4"
6"± (FV)
1/4
(TYP)
EL XXX
EXIST ANCHOR BOLT -1 1/2" DIA J BOLTS EMBEDDED 15" MIN (ASTM A307)
PL 7/8" x 10 1/2" x 0'-10 1/2"

DETAIL 2/– POST EXTENSION BOLSTER FIXED OR SLIDING SEATING

SCALE: 1" = 2'-0"


5/8" DIA BOLT EMBEDDED X" MIN (TYP)
EXIST END WALL
10"
10"
HSS 10" x 10" x 3/8" OR WF EQUIVALENT
BENT PL 3/8" x 4"
6" (TYP)

SECTION A/– METAL – STRAP ANCHOR

NOT TO SCALE

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE: JUNE 2011
DESIGN: X.X.X.
DRAWN: R. AGREDA, L. PENILLA
CHECKED: X.X.X.

ENGINEERING CERTIFICATION
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

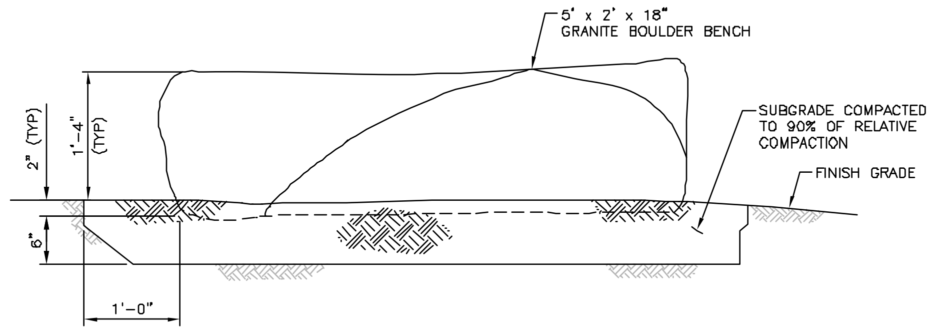
PEDESTRIAN BRIDGE POST EXTENSION DETAILS AND SECTION

SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: S-11
SHEET NUMBER: 54 OF 76

DOCUMENT NUMBER: BER_CY-S-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 09:35am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\S-12

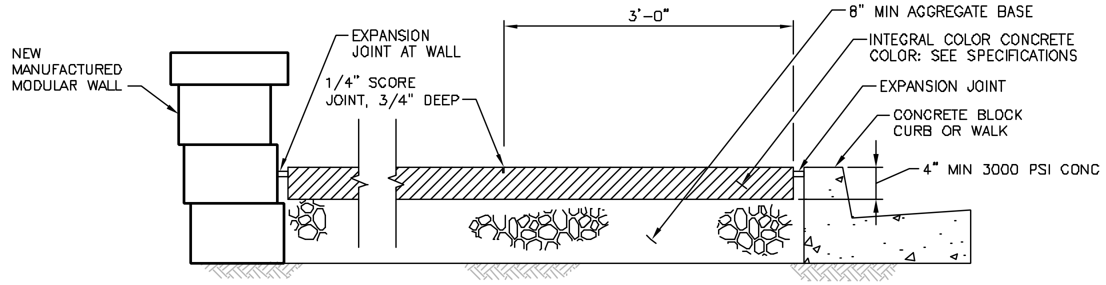


NOTE:

1. EACH BENCH COATED WITH CITY APPLIED ANTI GRAFFITI.

DETAIL 1 GRANITE BENCH

SCALE: 1" = 1'-0"

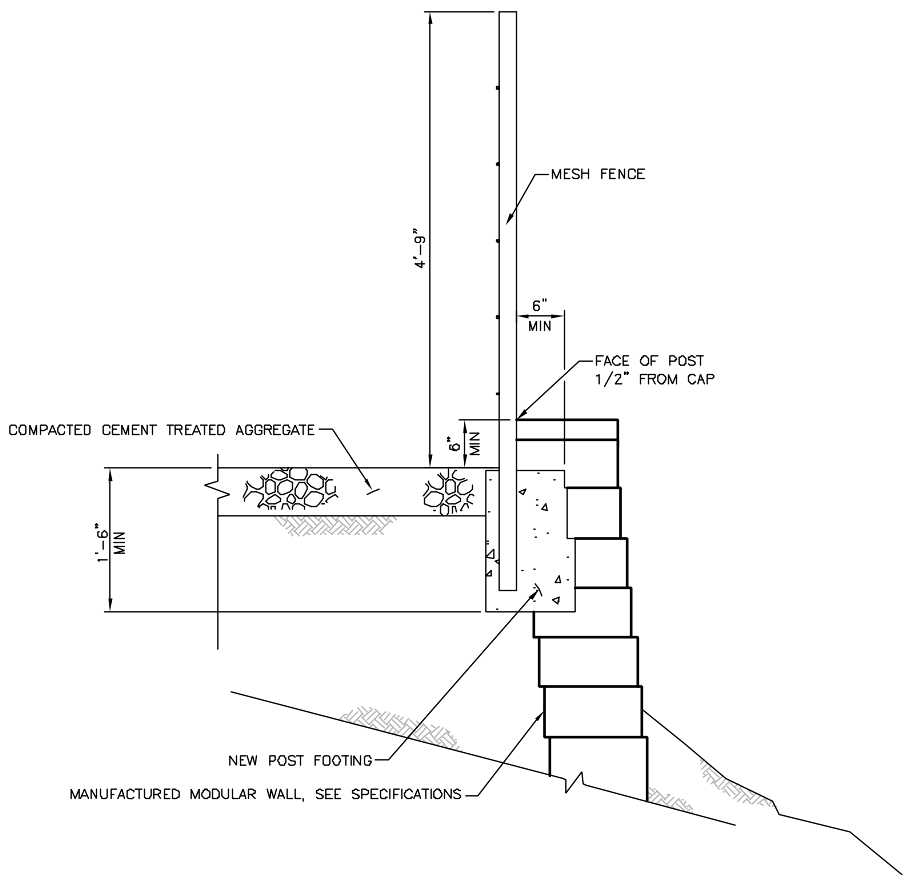

NEW MANUFACTURED MODULAR WALL
EXPANSION JOINT AT WALL
1/4" SCORE JOINT, 3/4" DEEP
3'-0"
8" MIN AGGREGATE BASE
INTEGRAL COLOR CONCRETE COLOR: SEE SPECIFICATIONS
EXPANSION JOINT
CONCRETE BLOCK CURB OR WALK
4" MIN 3000 PSI CONC

NOTE:

1. SCORE 3' x 3' GRID ON THE DIAGONAL STARTING AT CENTERLINE OF BRIDGE. INSTALL EXPANSION JOINTS AT WALL AND BRIDGE ABUTMENT.

DETAIL 2 INTEGRAL COLOR CONCRETE

SCALE: 1" = 1'-0"

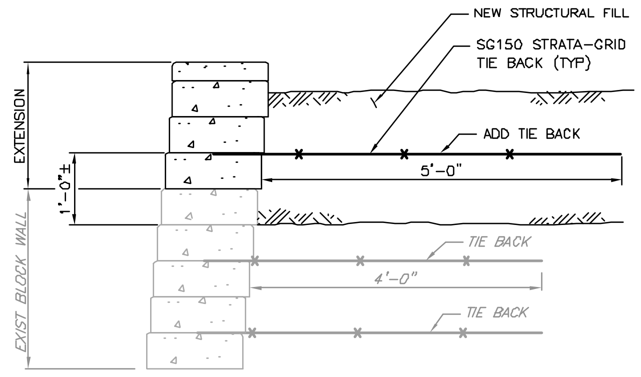

MESH FENCE
4'-9"
6" MIN
FACE OF POST 1/2" FROM CAP
COMPACTED CEMENT TREATED AGGREGATE
6" MIN
1'-6" MIN
NEW POST FOOTING
MANUFACTURED MODULAR WALL, SEE SPECIFICATIONS

DETAIL 3 WALL AND MESH FENCE

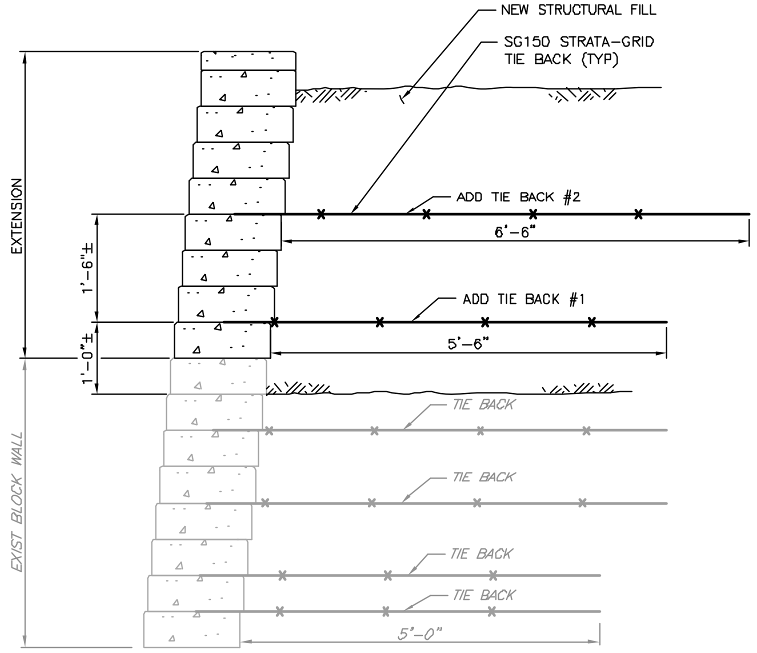
SCALE: 1" = 1'-0"

LOWER BERRYESSA BLOCK WALL EXTENSION NOTES:

1. STANDARD BLOCKS ARE 16" WIDE x 6" HIGH "COUNTRY MANOR" TYPE MODULAR BLOCKS AS MANUFACTURED BY KEYSTONE, OR EQUAL. THEY SHOULD MATCH WITH THE EXISTING BLOCK UNITS.
2. BLOCK WALL EXTENSION INSTALLATIONS SHALL BE ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS, EXCEPT COMPACTED FILL SHALL BE COMPACTED TO MINIMIZE THE INFILTRATION POTENTIAL.
3. BLOCK WALL EXTENSIONS VARY FROM 1 TO 4 FEET. FOR LOCATIONS AND ELEVATIONS, SEE PLANS AND PROFILES.
4. BLOCK WALL EXTENSIONS SHALL BE REINFORCED WITH ONE OR TWO TIE BACKS USING "SG150 STRATA-GRID" TIE BACK OR APPROVED EQUAL.



1' TO 2' EXTENSION WITH ONE TIE BACK



3' TO 4' EXTENSION WITH TWO TIE BACKS

DETAIL 4 TYPICAL BLOCKS EXTENSION

SCALE: 3/4" = 1'0"

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE
JUNE 2011
DESIGN
M.T. NGUYEN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
MINH-TRI NGUYEN
No. 25280
Exp. 12/31/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

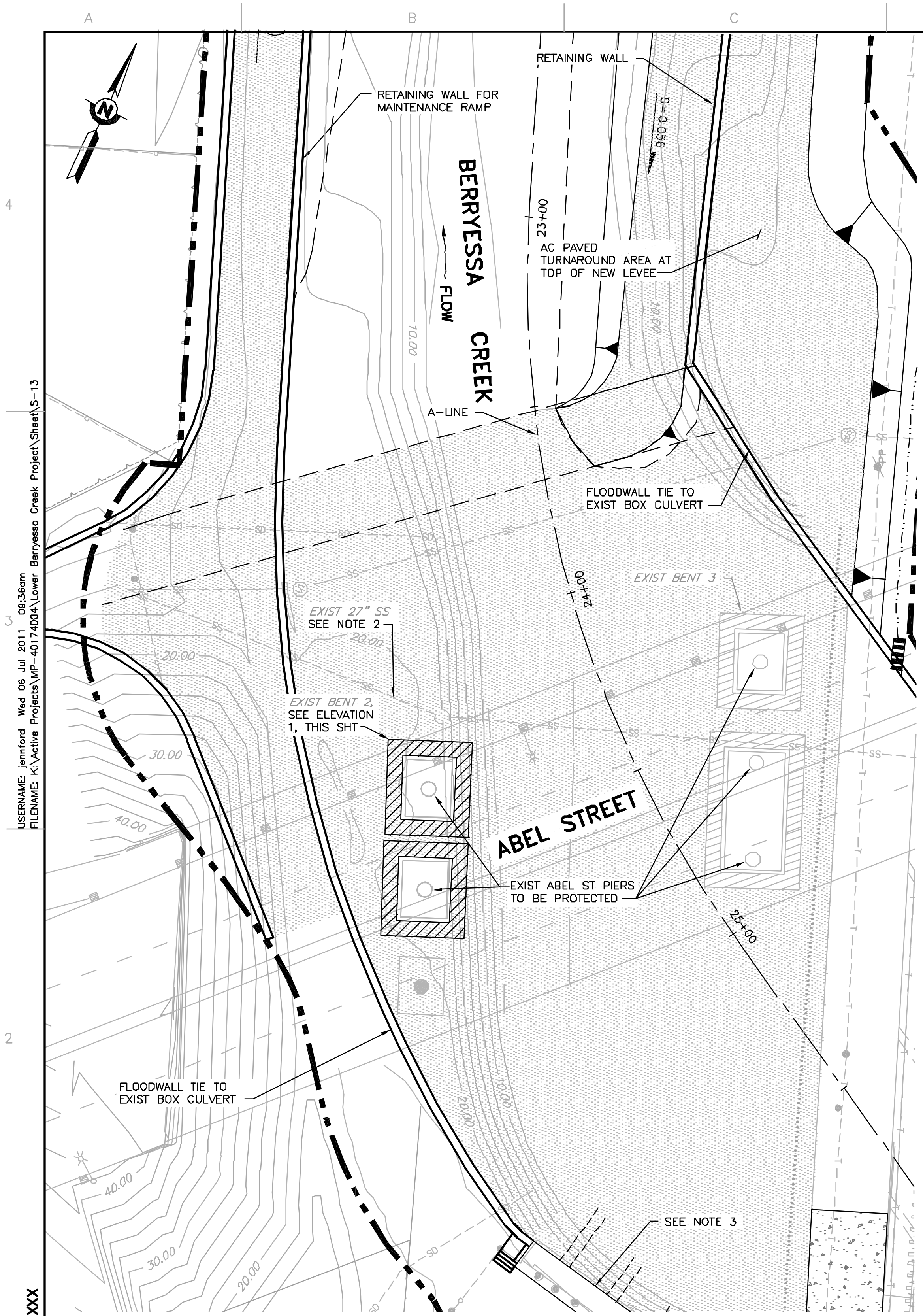
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

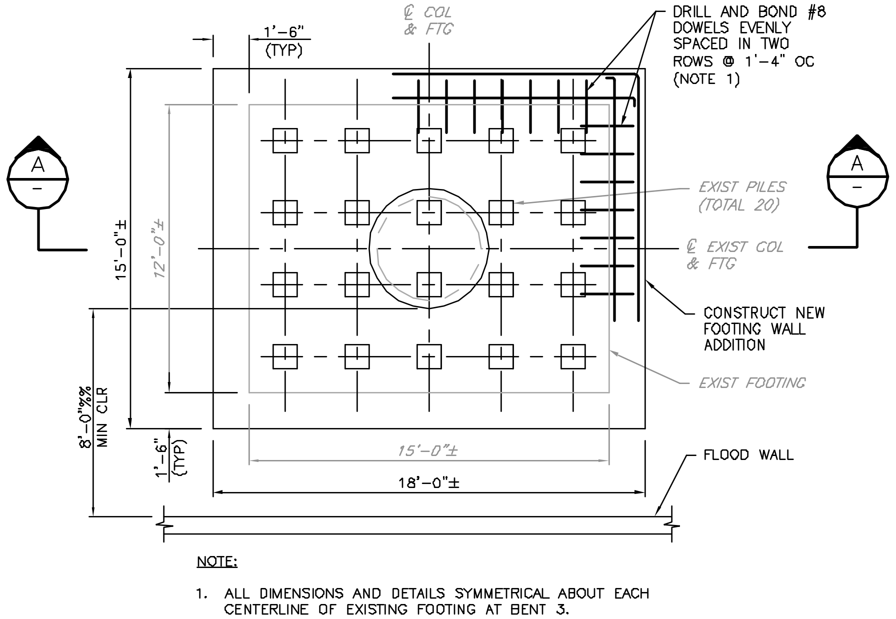
PEDESTRIAN BRIDGE DETAILS

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004
SHEET CODE:
S-12
SHEET NUMBER:
55 OF 76


RETAINING WALL
RETAINING WALL FOR MAINTENANCE RAMP
BERRYESSA CREEK
FLOW
S=0.056
23+00
24+00
25+00
AC PAVED TURNAROUND AREA AT TOP OF NEW LEVEE
A-LINE
FLOODWALL TIE TO EXIST BOX CULVERT
EXIST BENT 3
EXIST 27" SS SEE NOTE 2
EXIST BENT 2, SEE ELEVATION 1, THIS SHT
ABEL STREET
EXIST ABEL ST PIERS TO BE PROTECTED
FLOODWALL TIE TO EXIST BOX CULVERT
SEE NOTE 3
10.00
20.00
30.00
40.00

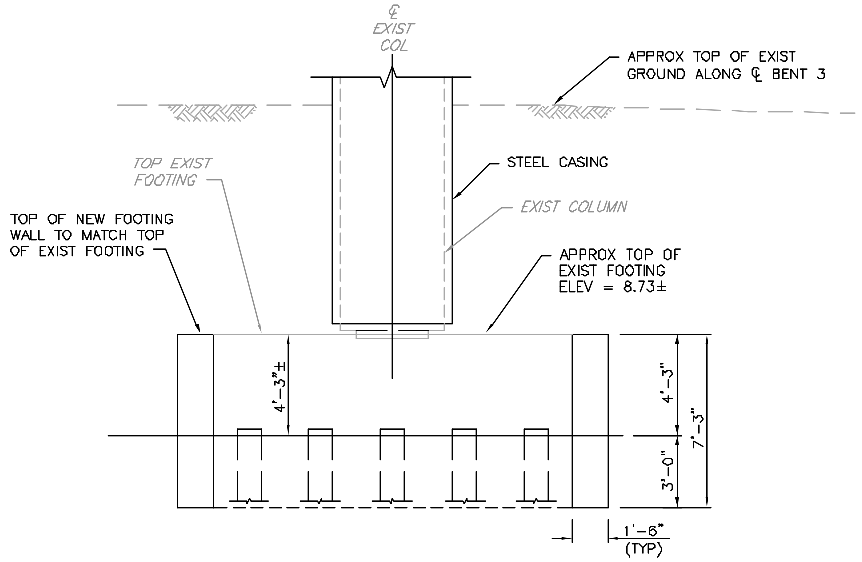
PLAN
SCALE 1" = 20'



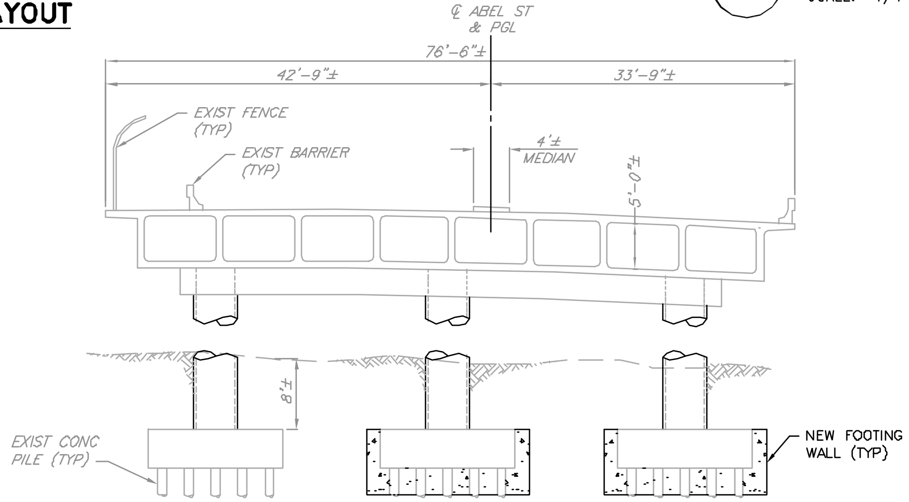
NOTE:

1. ALL DIMENSIONS AND DETAILS SYMMETRICAL ABOUT EACH CENTERLINE OF EXISTING FOOTING AT BENT 3.

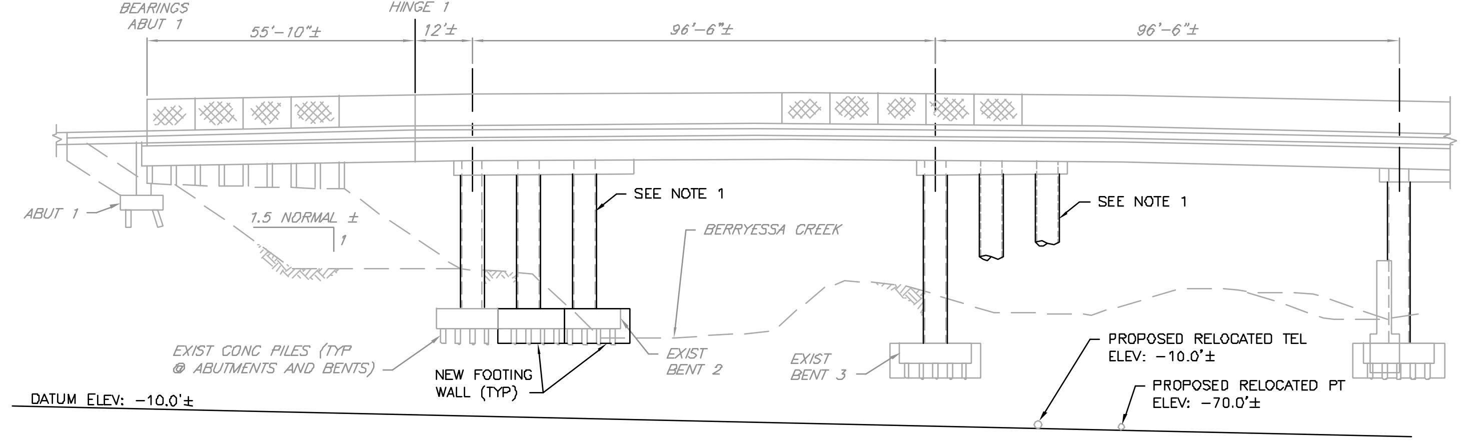
DETAIL 1 FOOTING PIER LAYOUT
SCALE: 1/4" = 1'-0"


℄ EXIST COL
APPROX TOP OF EXIST GROUND ALONG ℄ BENT 3
TOP EXIST FOOTING
STEEL CASING
EXIST COLUMN
TOP OF NEW FOOTING WALL TO MATCH TOP OF EXIST FOOTING
APPROX TOP OF EXIST FOOTING ELEV = 8.73±
4'-3"±
4'-3"
3'-0"
7'-3"
1'-6" (TYP)

SECTION A FOOTING PIER
SCALE: 1/4" = 1'-0"



ELEVATION 1 AT BENT 2 (LOOKING DOWNSTREAM)
SCALE: 3/32" = 1'-0"



ELEVATION 2 AT STA 25+25± (LOOKING DOWNSTREAM)
SCALE: 1" = 20'

USERNAME: jennford Wed 06 Jul 2011 09:36am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\S-13

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

1. EXISTING ABEL STREET BRIDGE PIERS TO BE PROTECTED
2. EXISTING 27" SANITARY SEWER TO BE PROTECTED IN PLACE
3. MODIFY EXIST OUTLET STRUCTURE AT WRIGLEY FORD PUMP STATION TO DISCHARGE THROUGH FLOODWALL

DATE: JUNE 2011
DESIGN: B. TAN
DRAWN: D.BETTENDORF J. FORD
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

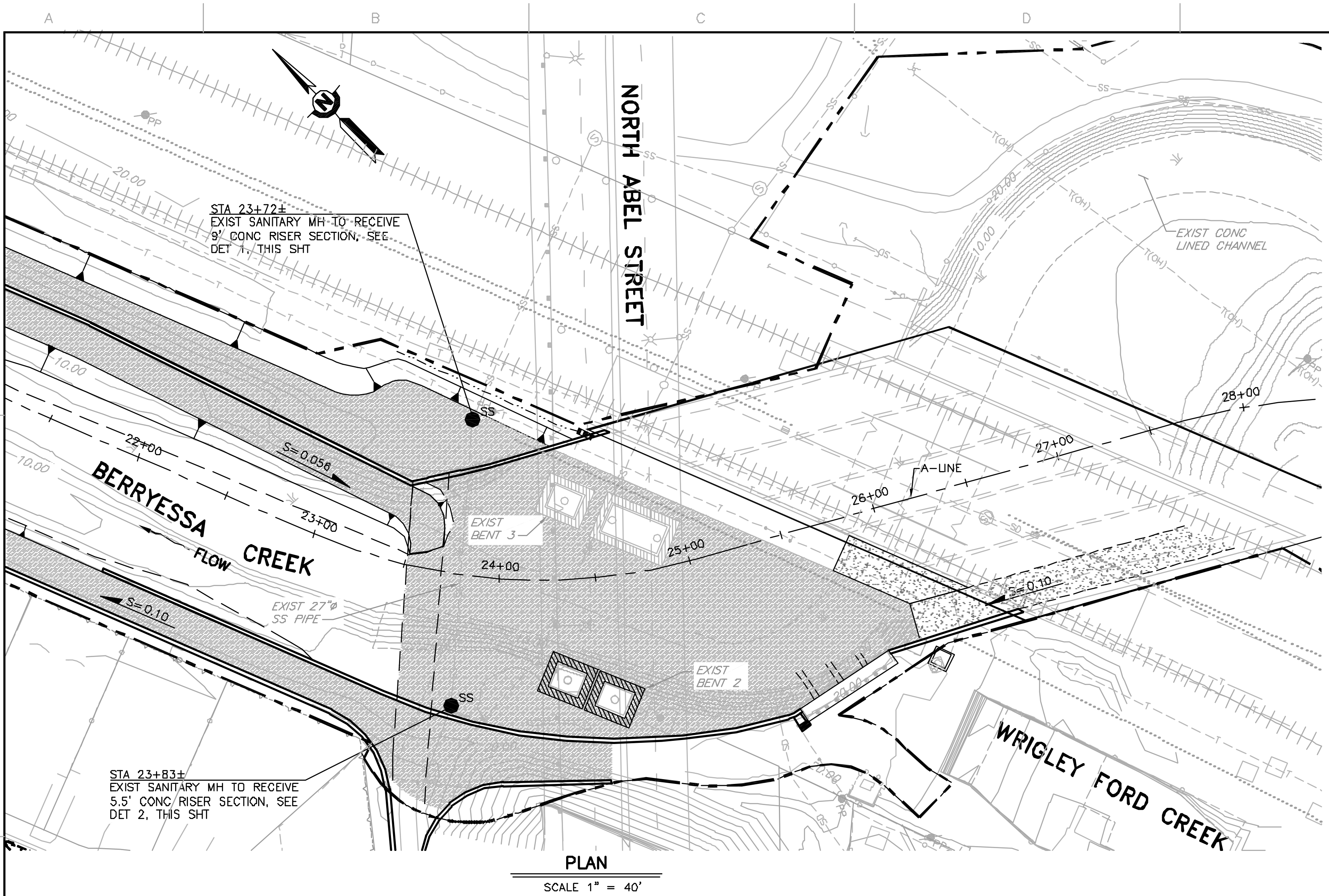
LOWER BERRYESSA CREEK
PROJECT

ABLE STREET BENT PLAN,
DETAIL, SECTION AND ELEVATIONS

SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

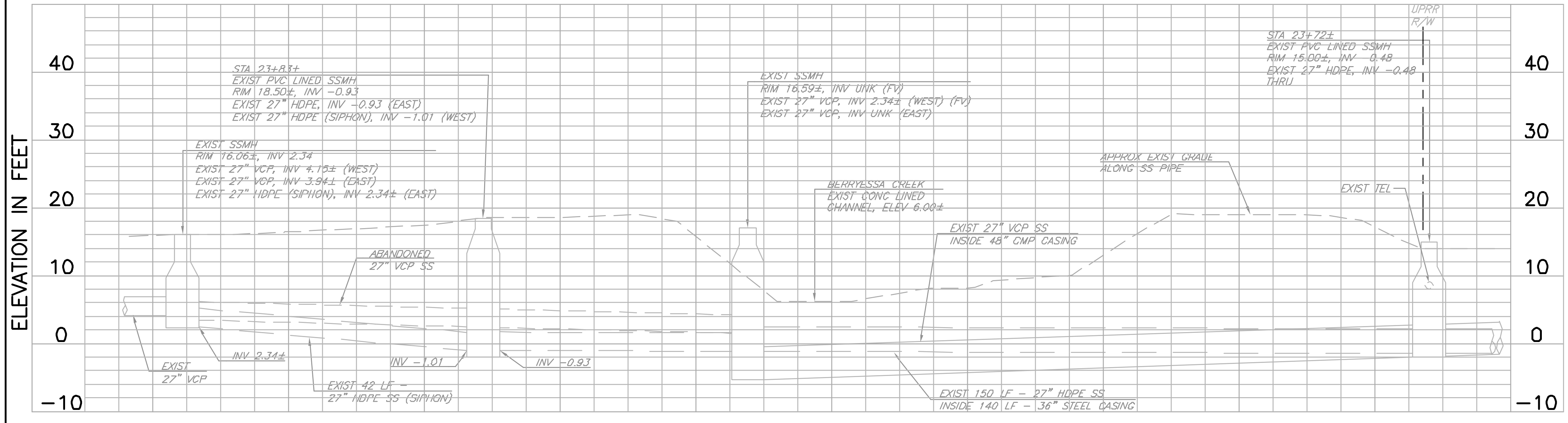
PROJECT NUMBER: 40174004
SHEET CODE: S-13
SHEET NUMBER: 56 OF 76

DOCUMENT NUMBER: BER_CY-S-4017-XXXXX



PLAN

SCALE 1" = 40'

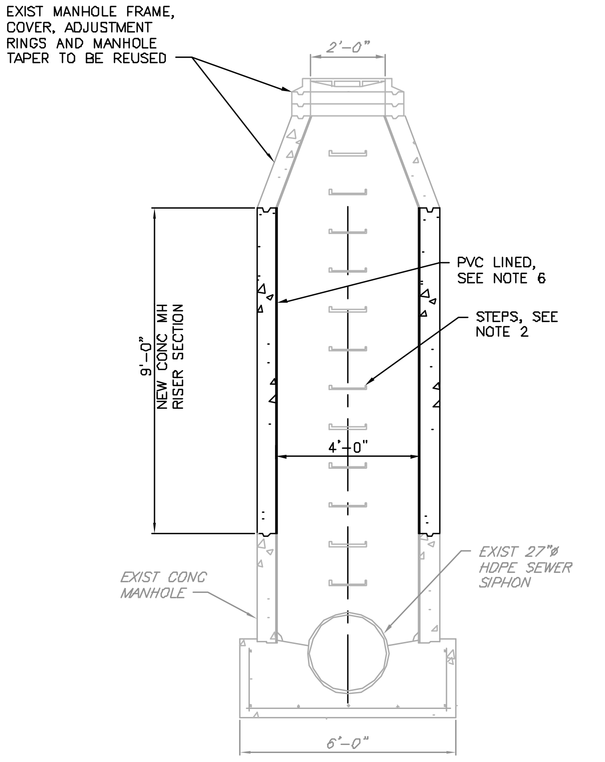


PROFILE – ALONG EXISTING 27"ø SANITARY SEWER (LOOKING NORTH)

HORIZ: 1" = 10'
VERT: 1" = 10'

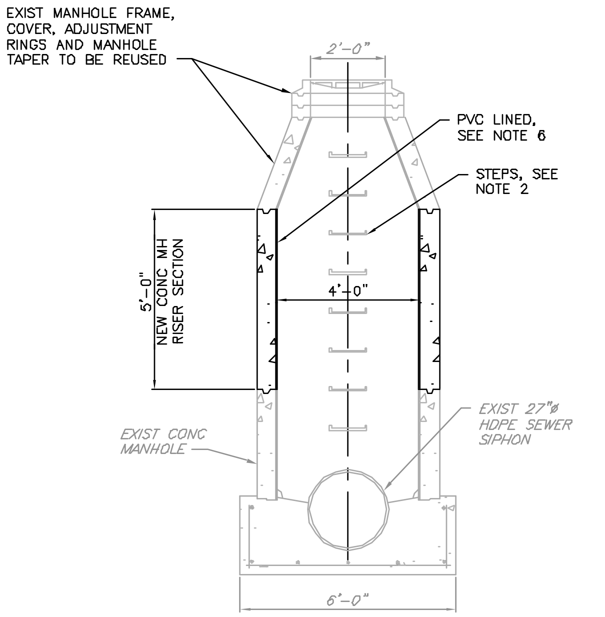
MANHOLE NOTES:

1. WHERE MANHOLE IS CONSTRUCTED IN EASEMENT OR OTHER NON-PAVED LOCATION, COVER SHALL BE SIX INCHES ABOVE GROUND, AT PAVED LOCATIONS, COVER SHALL BE FLUSH WITH SURROUNDING GRADE.
2. STEPS SHALL BE PLACED 13 INCHES O.C. FROM BOTTOM TO TOP. COPOLYMER POLYPROPYLENE PLASTIC COATED 1/2" GRADE 60 STEEL REINFORCEMENT BY MA INDUSTRIES PS2-PF PR APPROVED EQUAL SHALL BE USED.
3. ALL MANHOLES TO BE CONSTRUCTED WATERTIGHT.
4. CAST-IN-PLACE BASE CLASS A CONCRETE WITH MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS (CEMENT TYPE V). PROVIDE SIX INCHES THICK CL 2 AGGREGATES BELOW BASE MANHOLE COMPACT TO 90% MINIMUM RELATIVE COMPACTION.
5. OBTAIN CITY PERMIT PRIOR TO CONSTRUCTION.
6. PROVIDE PVC-LINED MANHOLES FOR SIPHON PIPES. REFER TO PLAN VIEW ON THIS SHEET, FOR MANHOLES REQUIRING PVC LINER.
7. REFER TO CITY STANDARD DRAWINGS NO 230 FOR ADDITIONAL REQUIREMENTS NOT SHOWN ON THE MANHOLE DETAILS ON THIS SHEET. WHERE CONFLICTS, THE MOST STRINGENT REQUIREMENTS APPLY.



DETAIL (1/–) 9' CONCRETE MANHOLE RISER

SCALE: 3/8" = 1'-0"



DETAIL (2/–) 5.5' CONCRETE MANHOLE RISER

SCALE: 3/8" = 1'-0"

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE: JUNE 2011
DESIGN: B. TAN
DRAWN: D.BETTENDORF
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

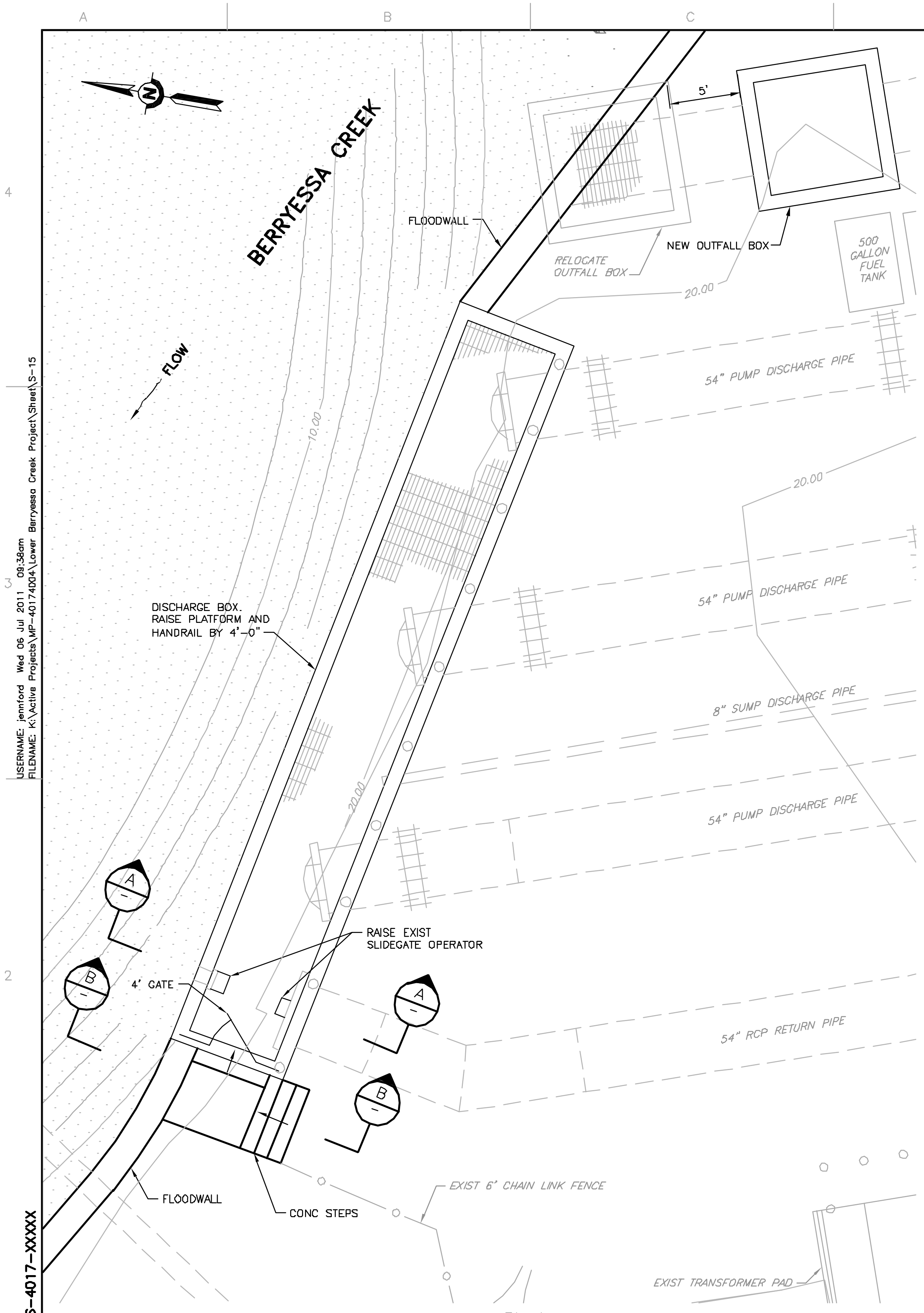
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

SANITARY SEWER
PLAN, PROFILE AND DETAILS

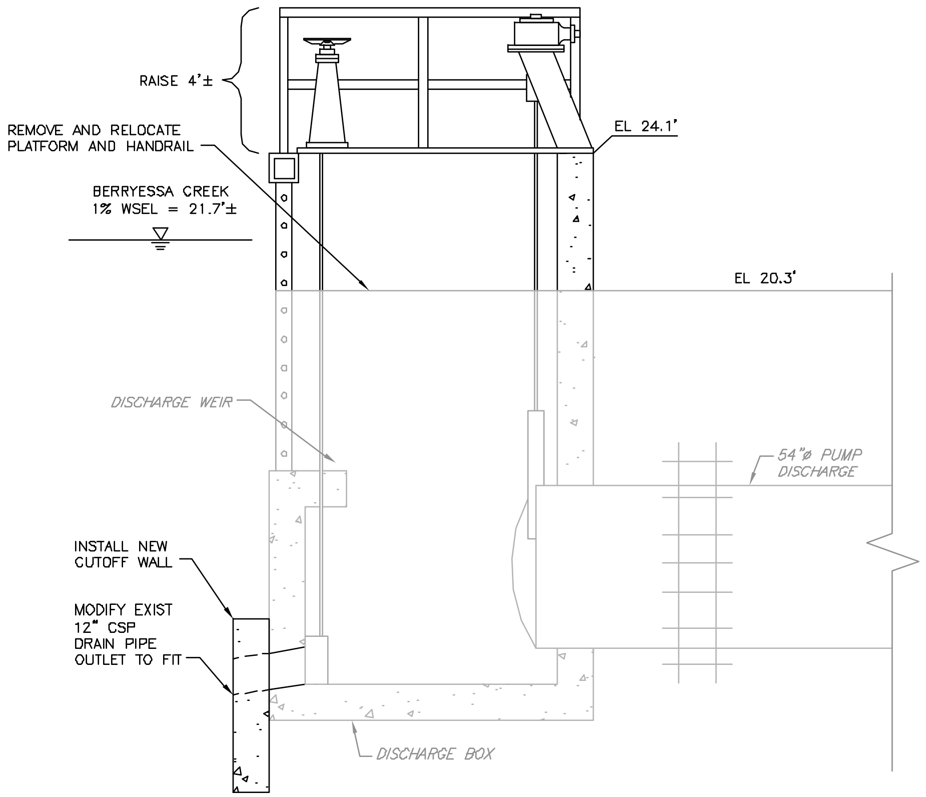
SCALE: AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: S-14
SHEET NUMBER: 57 OF 76



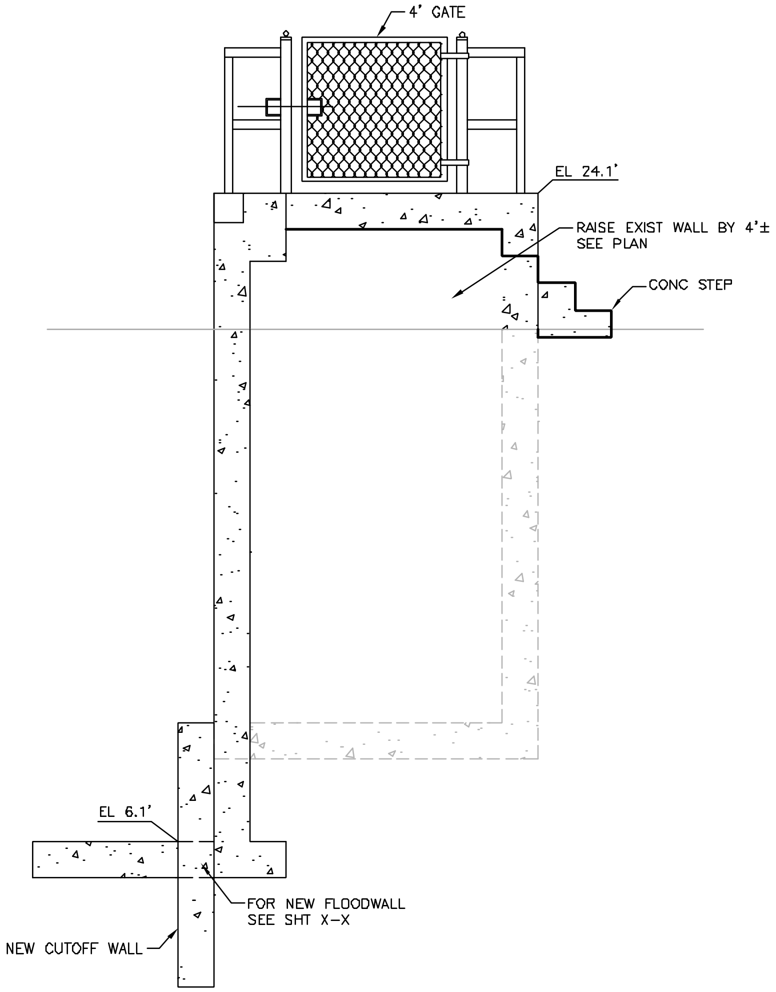
PLAN

SCALE 1" = 5'


RAISE 4'±
REMOVE AND RELOCATE PLATFORM AND HANDRAIL
BERRYESSA CREEK 1% WSEL = 21.7'±
EL 24.1'
EL 20.3'
DISCHARGE WEIR
54"ø PUMP DISCHARGE
INSTALL NEW CUTOFF WALL
MODIFY EXIST 12" CSP DRAIN PIPE OUTLET TO FIT
DISCHARGE BOX

SECTION A/– DISCHARGE BOX RAISED PLATFORM AND HANDRAIL

SCALE: 3/8" = 1'-0"


4' GATE
EL 24.1'
RAISE EXIST WALL BY 4'± SEE PLAN
CONC STEP
EL 6.1'
FOR NEW FLOODWALL SEE SHT X-X
NEW CUTOFF WALL

SECTION B/– DISCHARGE BOX CONC STEPS AND GATE

SCALE: 3/8" = 1'-0"

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE
JUNE 2011
DESIGN
M.T. NGUYEN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
No. C67534
Exp. 06/30/11
TONY TEGHEN NDAH
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK
PROJECT

DISCHARGE BOX
PLAN AND SECTIONS

SCALE
AS SHOWN
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

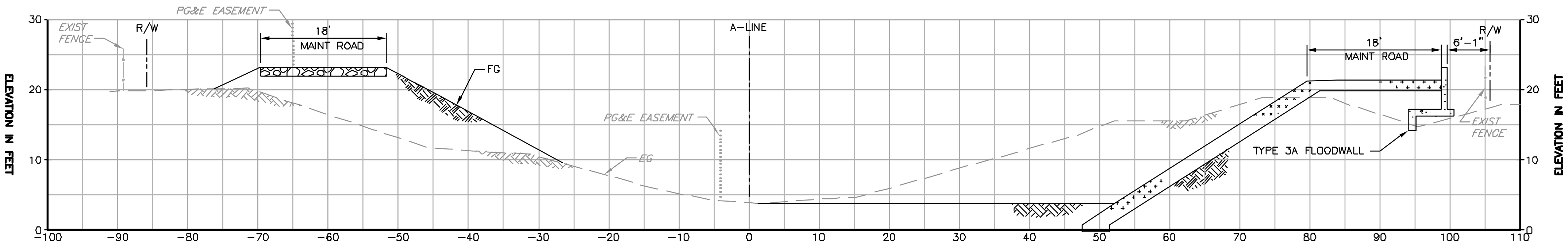
PROJECT NUMBER
40174004
SHEET CODE:
S-15
SHEET NUMBER:
58 OF 76

USERNAME: jennford Wed 06 Jul 2011 09:38am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\S-15

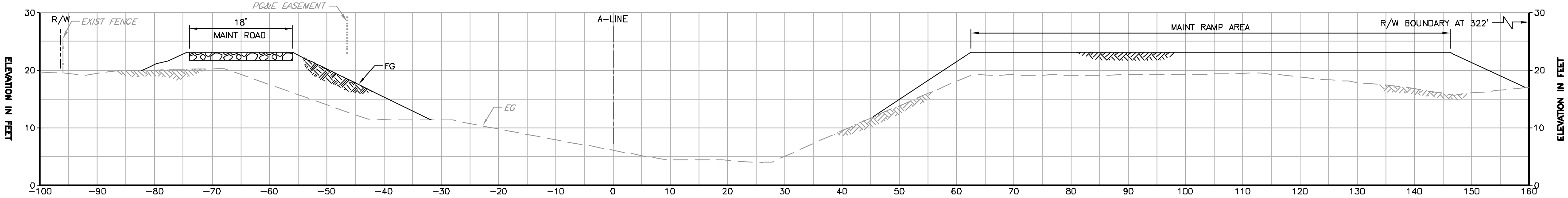
DOCUMENT NUMBER: BER_CY-S-4017-XXXXX

USERNAME: jennford Wed 06 Jul 2011 09:39am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\X-01

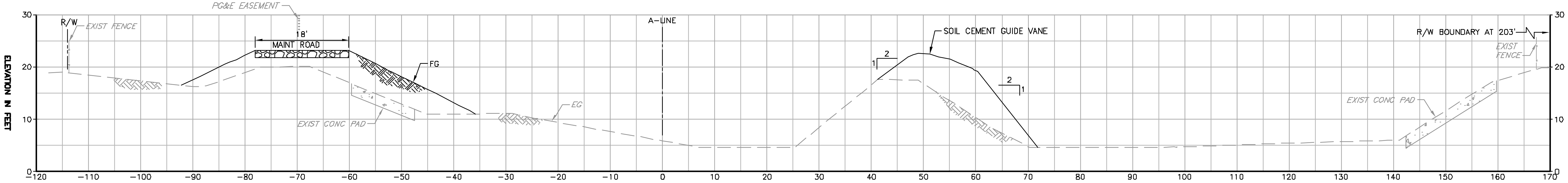
DOCUMENT NUMBER: BER_CY-X-4017-XXXXX



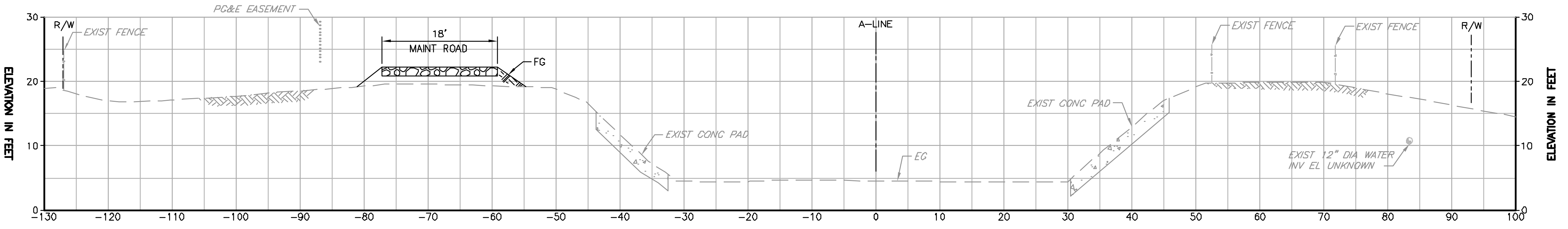
STA 2+50



STA 2+00



STA 1+50



STA 0+00

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67834
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

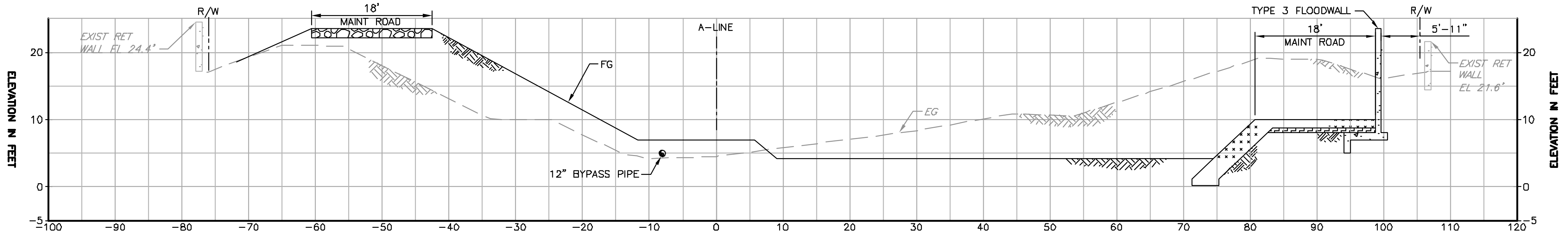
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK
PROJECT

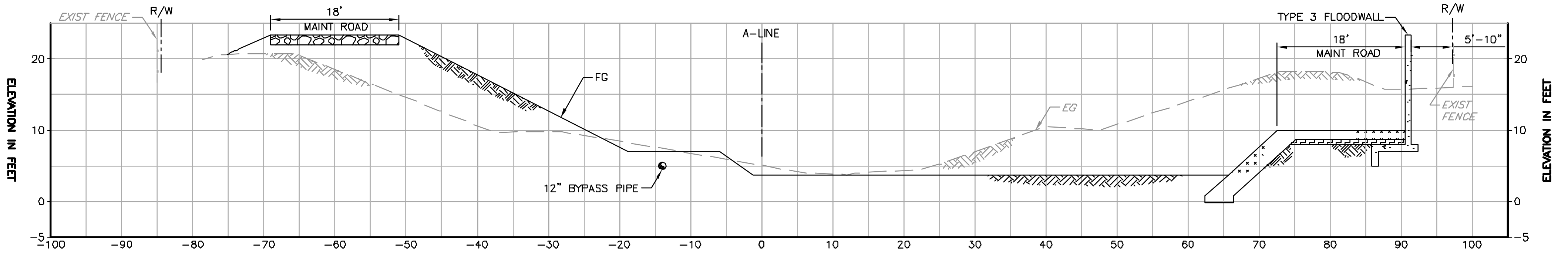
CROSS SECTIONS
STA 0+00 TO STA 2+50

SCALE
H: 1"=10'
V: 1"=10'
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

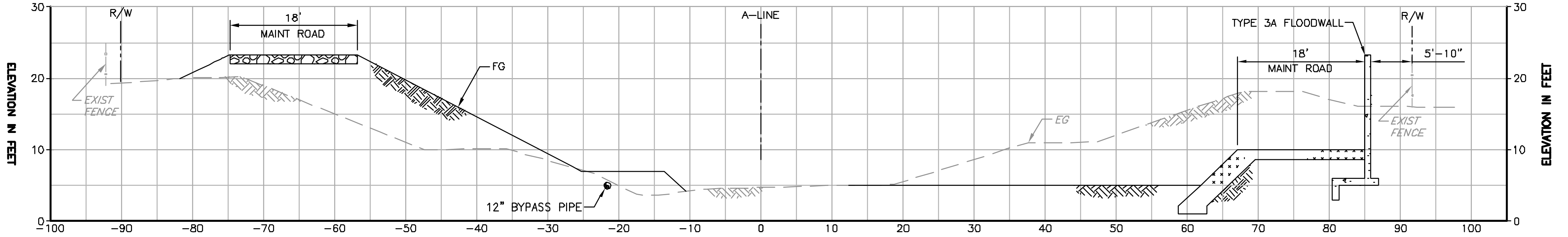
PROJECT NUMBER
40174004
SHEET CODE:
X-1
SHEET NUMBER:
59 OF 76



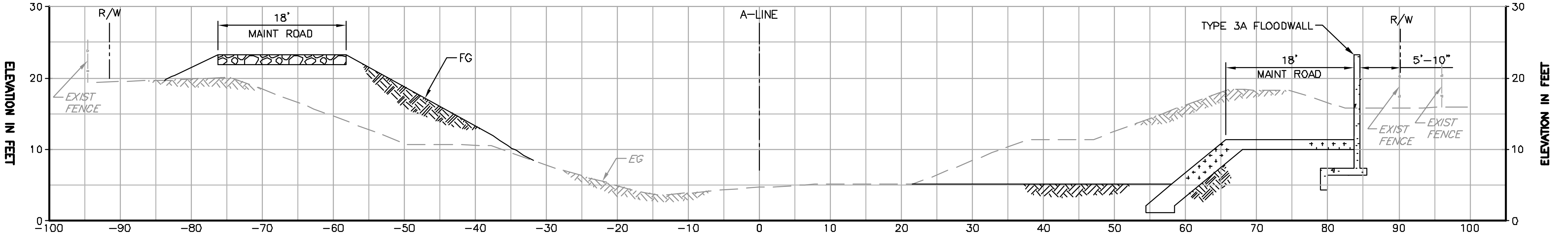
STA 9+00



STA 6+00



STA 4+00



STA 3+50

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

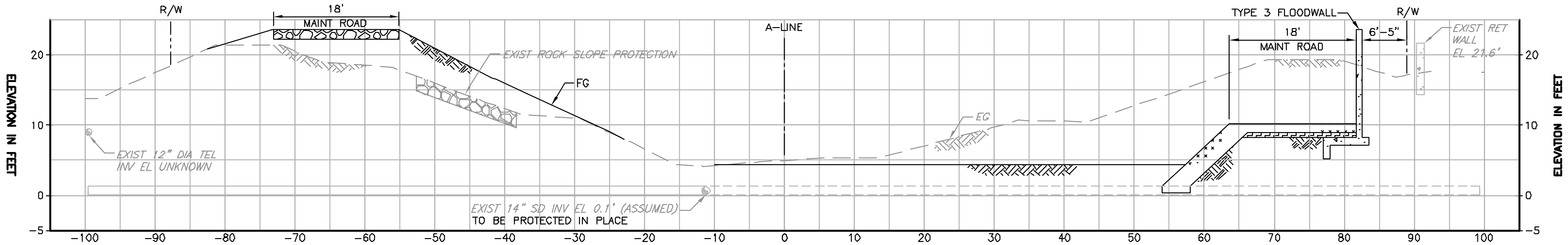
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

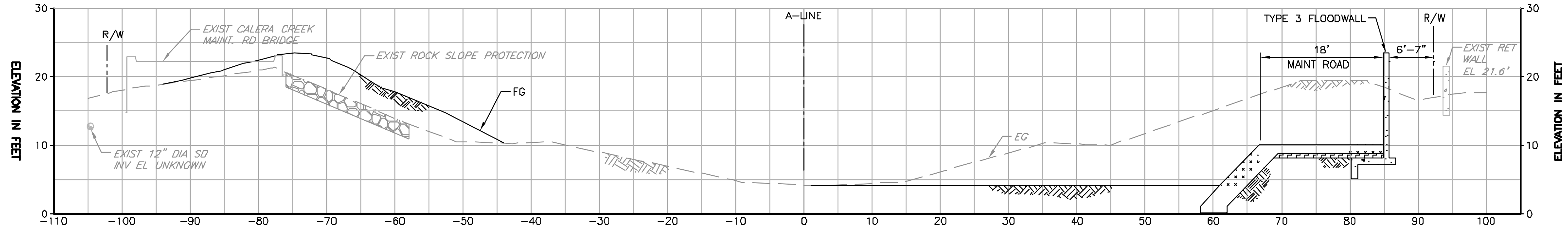
CROSS SECTIONS
STA 3+50 TO STA 9+00

SCALE
H: 1"=10'
V: 1"=10'
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

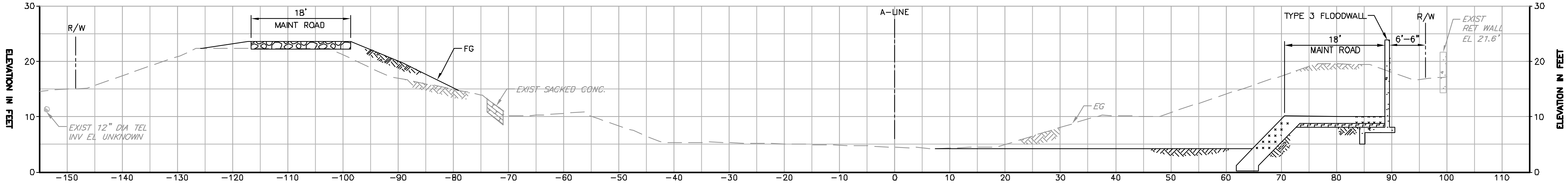
PROJECT NUMBER
40174004
SHEET CODE:
X-2
SHEET NUMBER:
60 OF 76



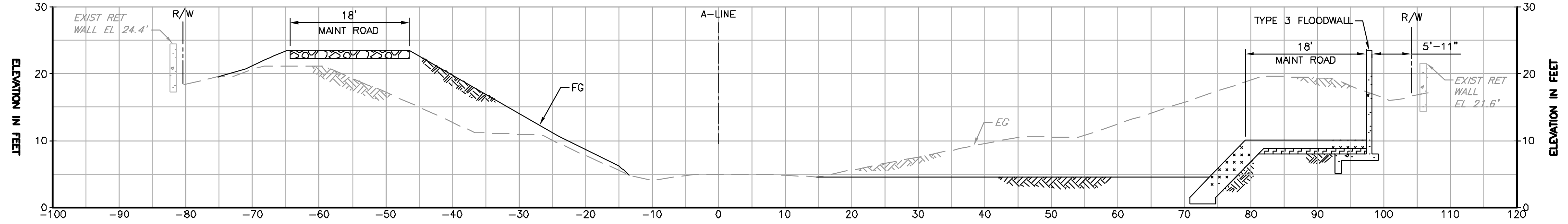
STA 11+50



STA 11+00



STA 10+50



STA 9+50

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
STA 9+50 TO STA 11+50

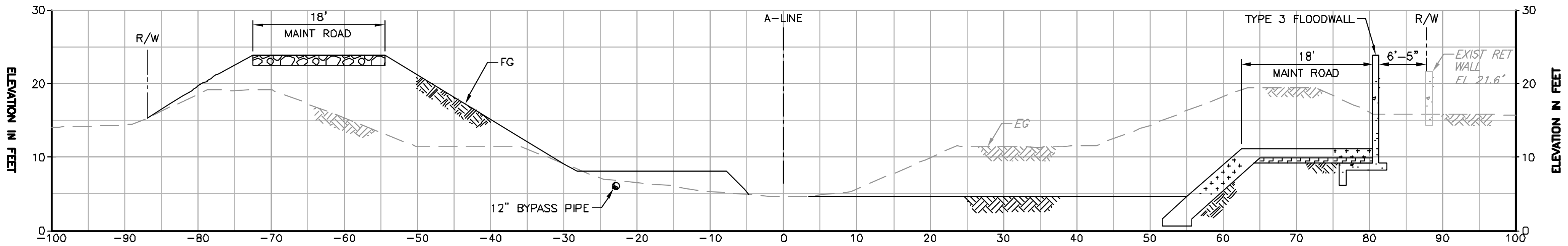
SCALE
H: 1"=10'
V: 1"=10'

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

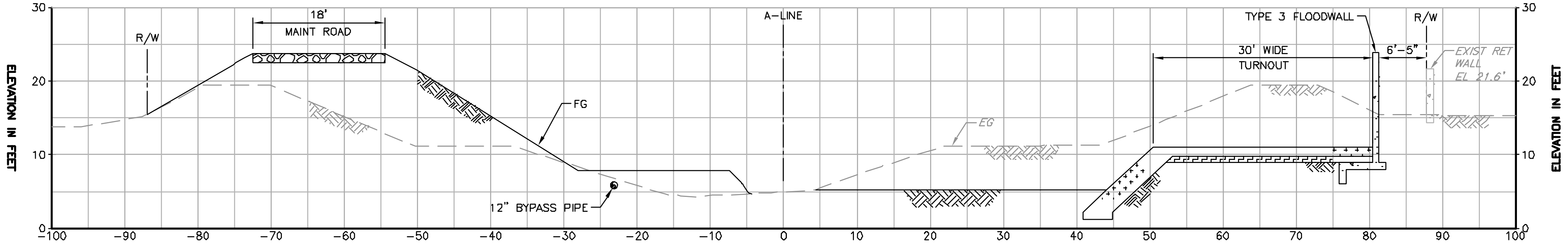
PROJECT NUMBER
40174004

SHEET CODE:
X-3

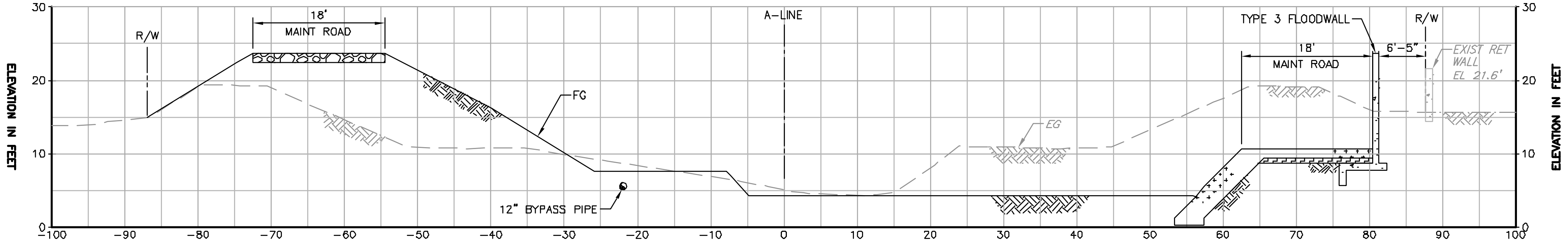
SHEET NUMBER:
61 OF 76



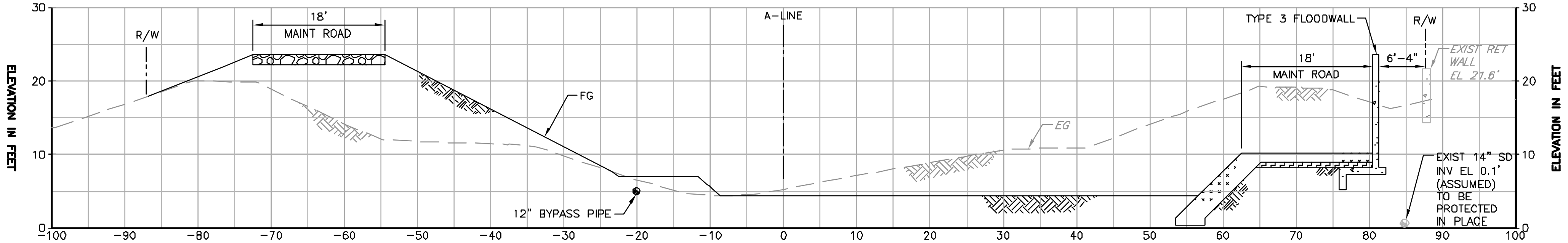
STA 20+00



STA 18+50



STA 16+00



STA 12+00

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
STA 12+00 TO STA 20+00

SCALE
H: 1"=10'
V: 1"=10'

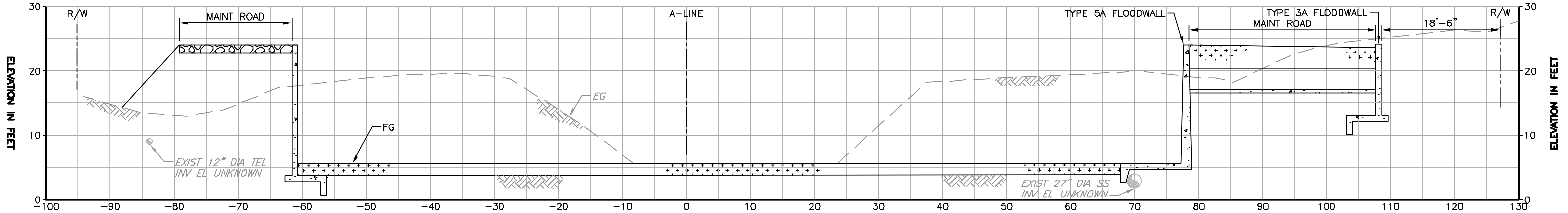
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

SHEET CODE:
X-4

SHEET NUMBER:
62 OF 76

USERNAME: jennford Wed 06 Jul 2011 09:47am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\X-04



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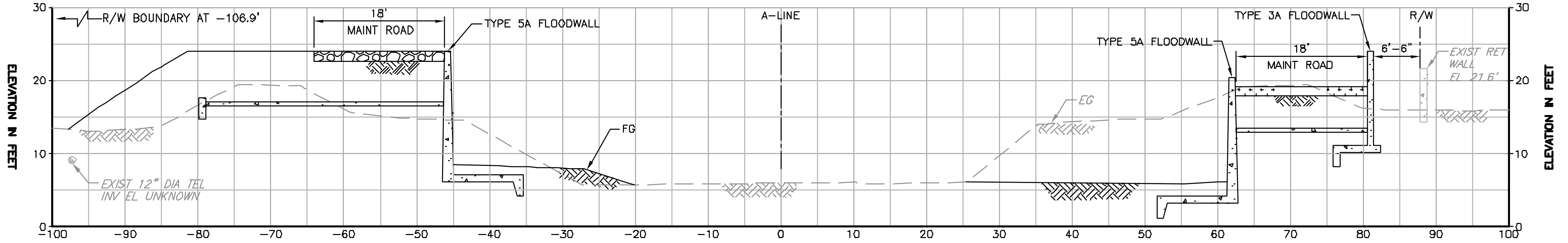
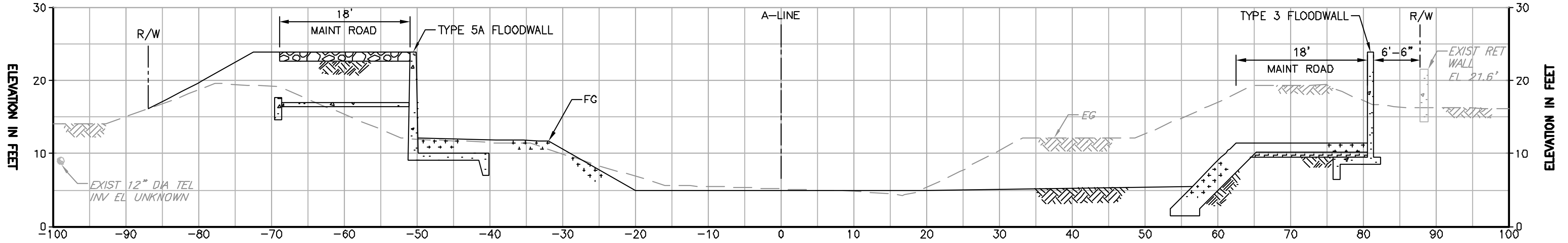
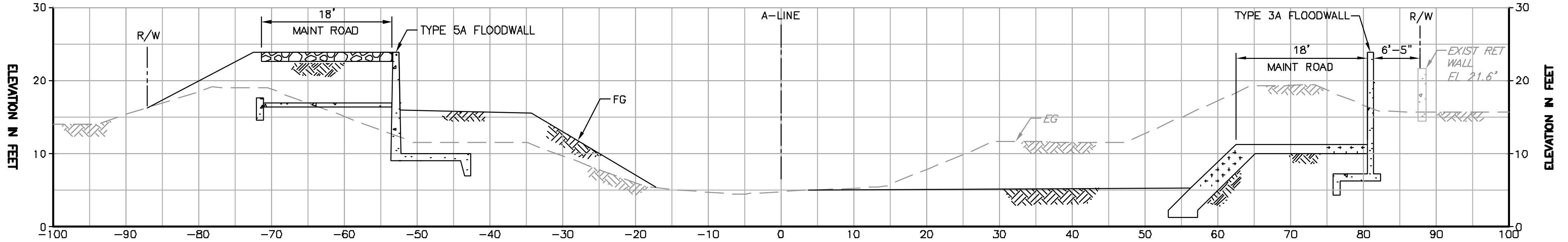


STA 23+00



STA 22+00



STA 21+00

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

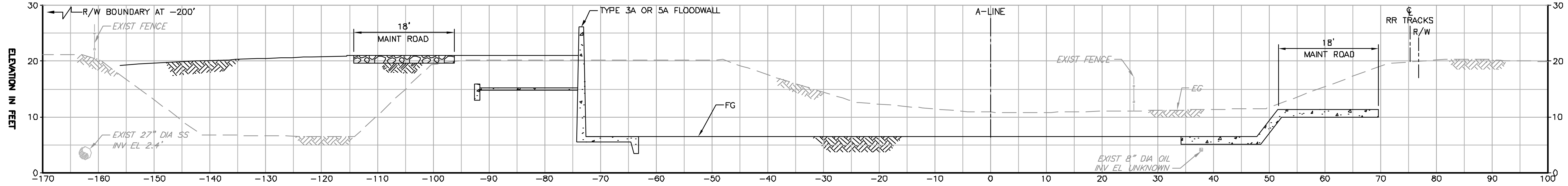
CROSS SECTIONS
STA 21+00 TO STA 24+00

SCALE
H: 1"=10'
V: 1"=10'

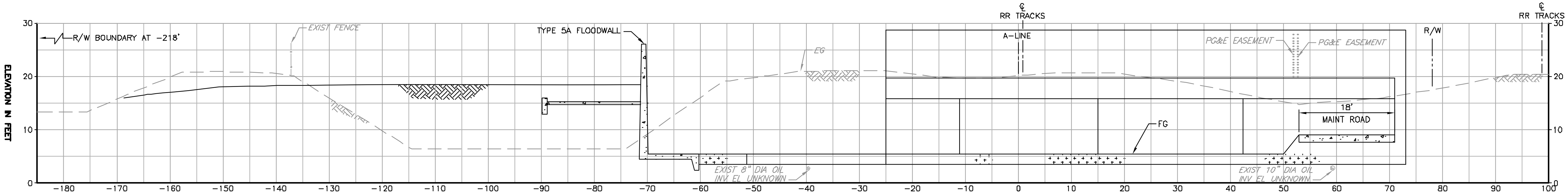
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

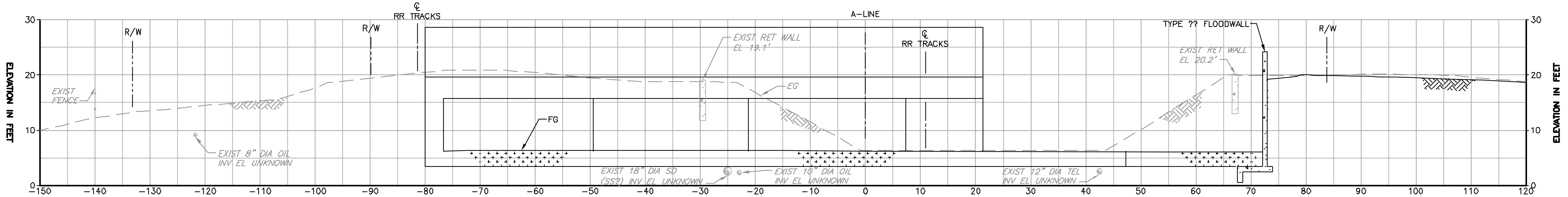
SHEET CODE:
X-5



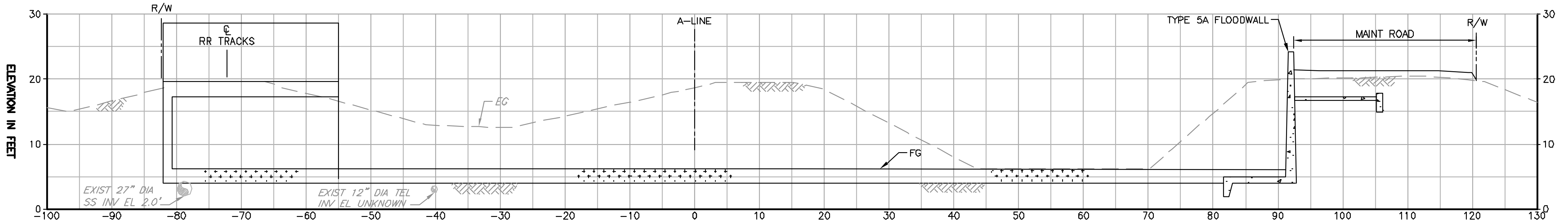
STA 28+00



STA 27+00



STA 26+00



STA 25+00

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
STA 25+00 TO STA 28+00

SCALE
H: 1"=10'
V: 1"=10'

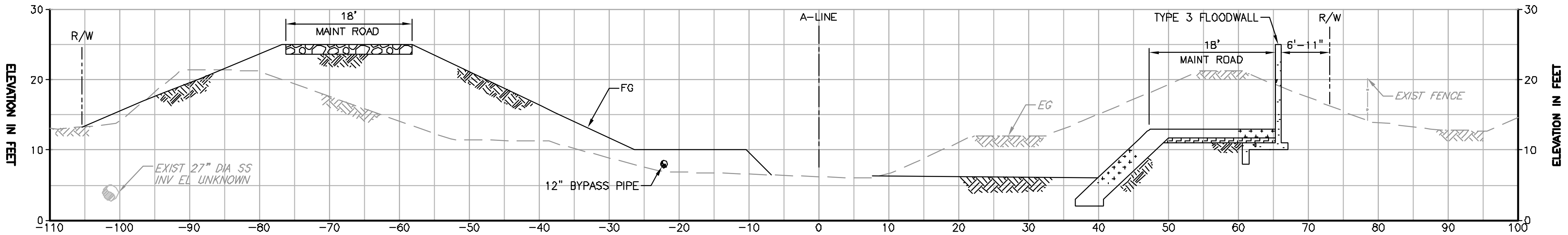
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

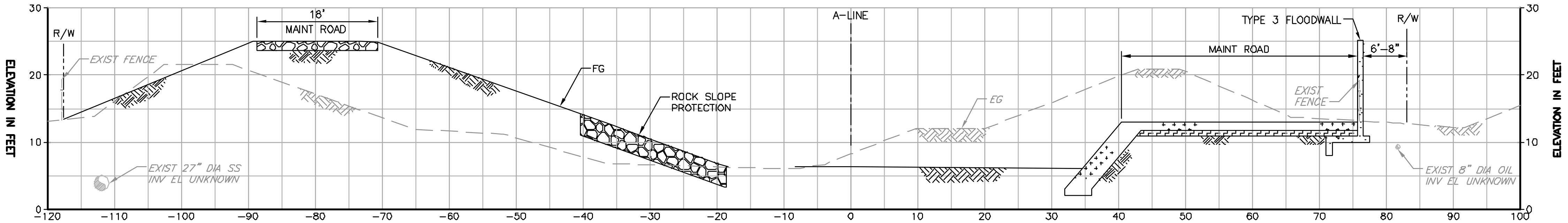
SHEET CODE:
X-6

SHEET NUMBER:
64 OF 76

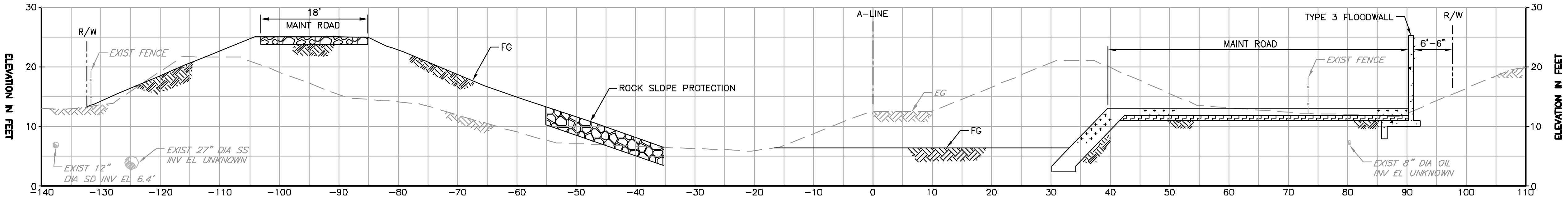
USERNAME: jennford Wed 06 Jul 2011 09:51am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\X-07



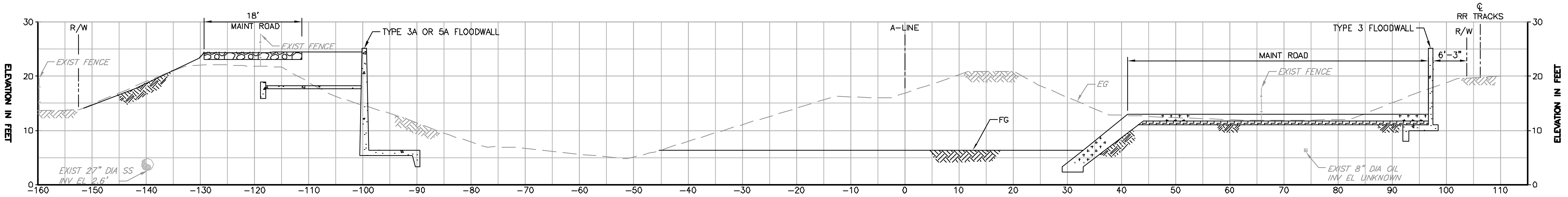
STA 30+50



STA 30+00



STA 29+50



STA 29+00

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
STA 29+00 TO STA 30+50

SCALE
H: 1"=10'
V: 1"=10'

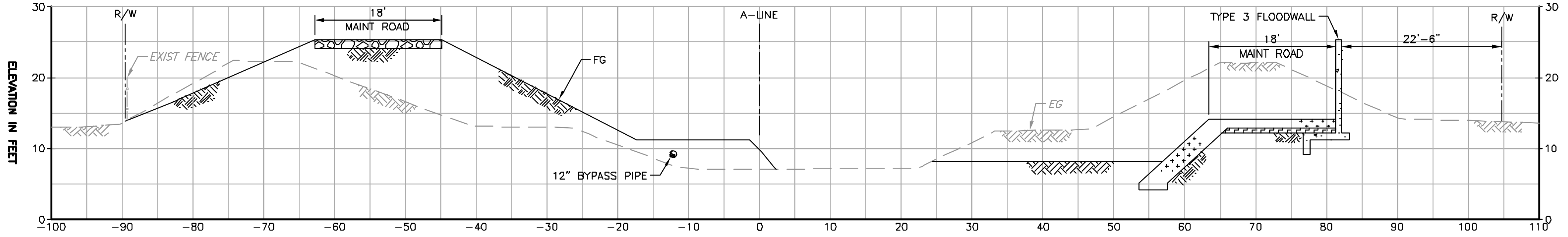
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

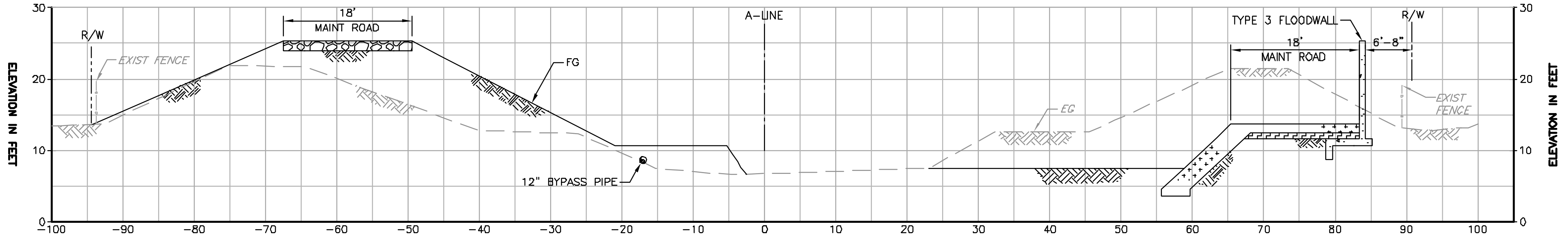
SHEET CODE:
X-7

SHEET NUMBER:
65 OF 76

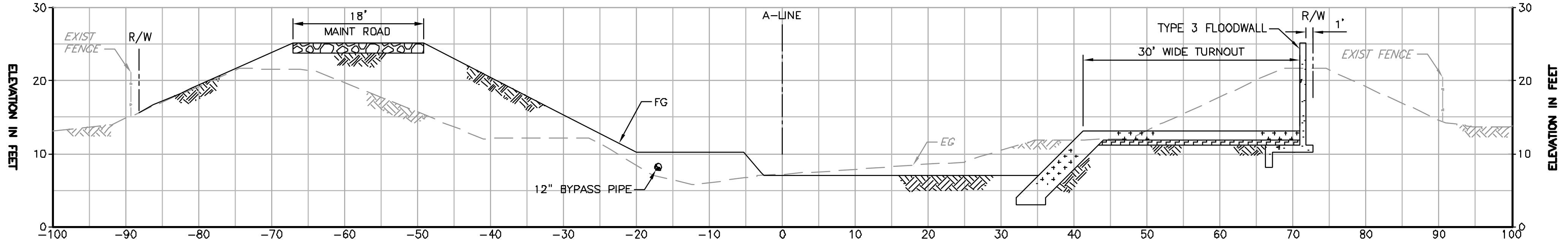
DOCUMENT NUMBER: BER_CY-X-4017-XXXXX



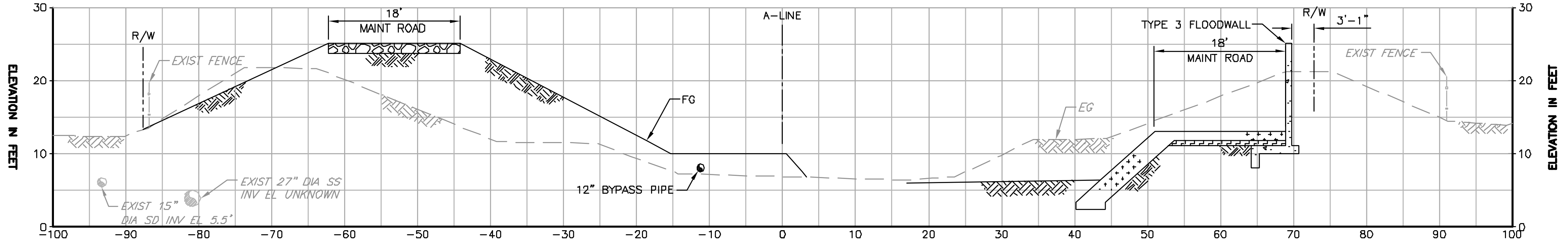
STA 38+50



STA 36+00



STA 33+50



STA 32+50

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
STA 32+50 TO STA 38+50

SCALE
H: 1"=10'
V: 1"=10'

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

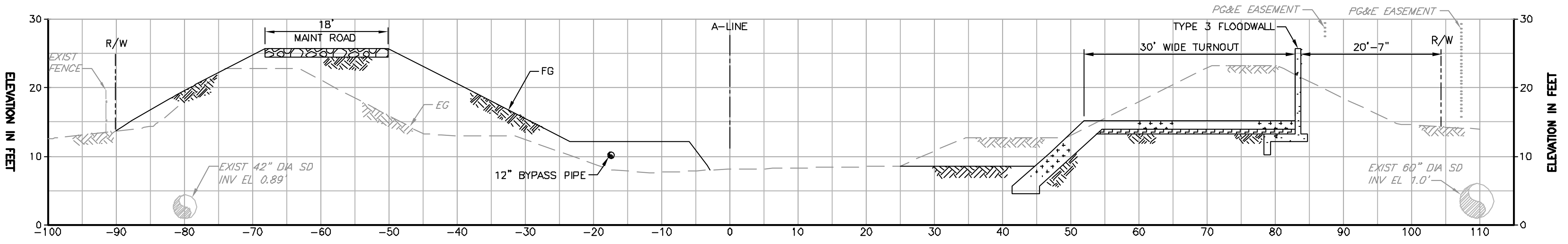
PROJECT NUMBER
40174004

SHEET CODE:
X-8

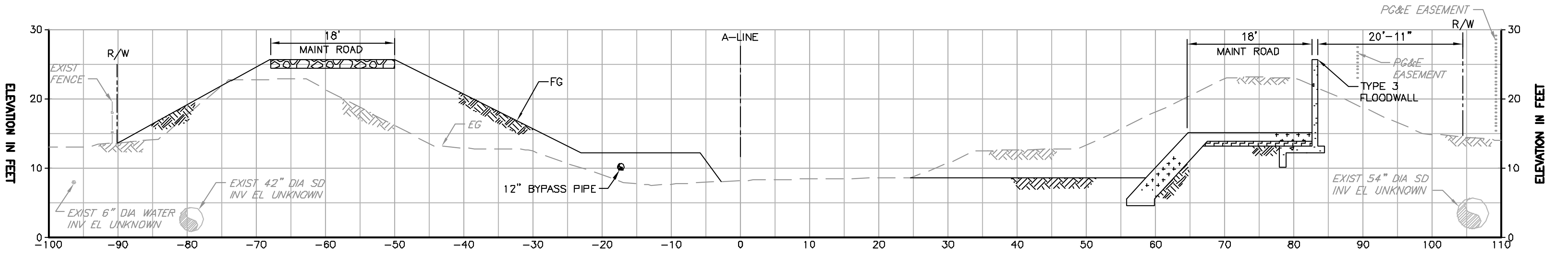
SHEET NUMBER:
66 OF 76

DOCUMENT NUMBER: BER_CY-X-4017-XXXXX

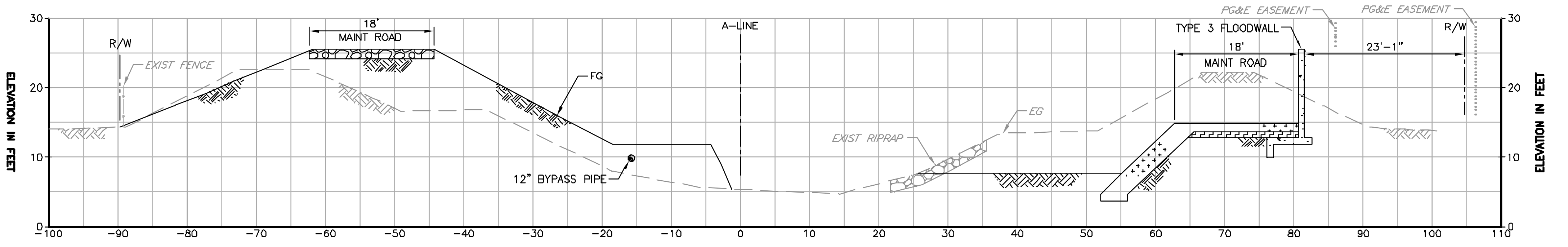
USERNAME: jennford Wed 06 Jul 2011 09:53am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\X-08



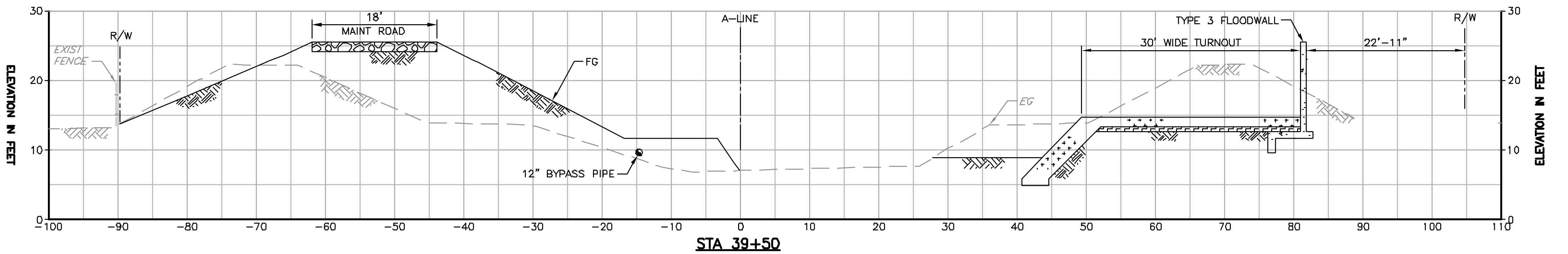
STA 45+50



STA 45+00



STA 40+50



STA 39+50

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

REGISTERED PROFESSIONAL ENGINEER TONY TEGHEN NDAH No. C67534 Exp. 06/30/11 CIVIL STATE OF CALIFORNIA

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
STA 39+50 TO STA 45+50

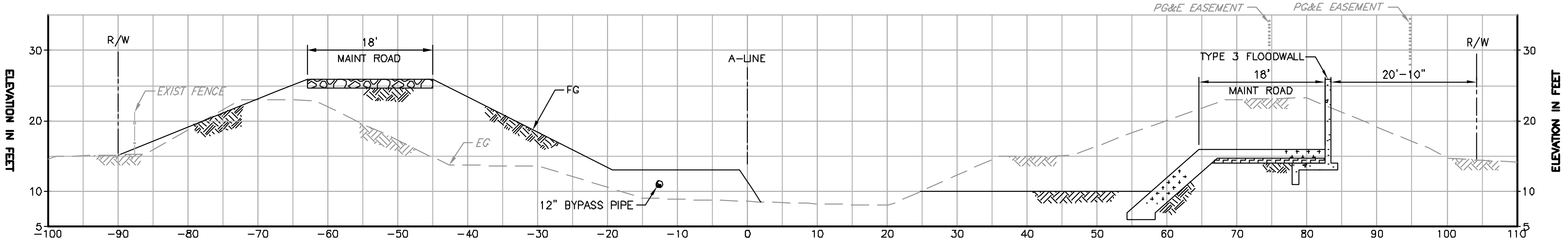
SCALE
H: 1"=10'
V: 1"=10'

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

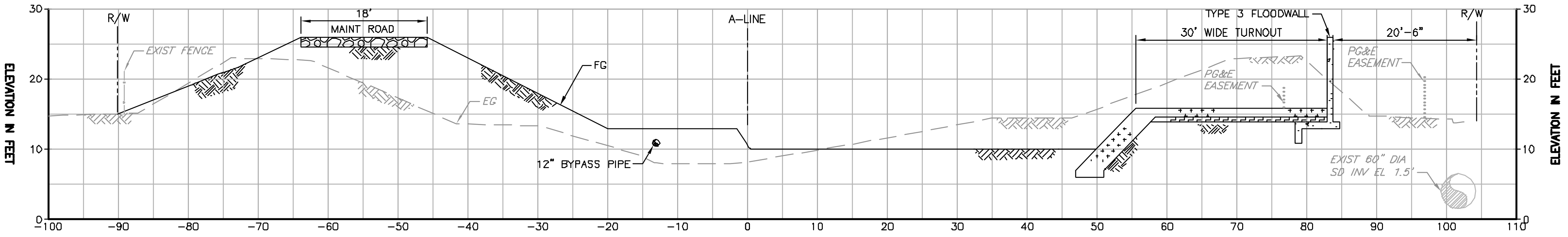
PROJECT NUMBER
40174004

SHEET CODE:
X-9

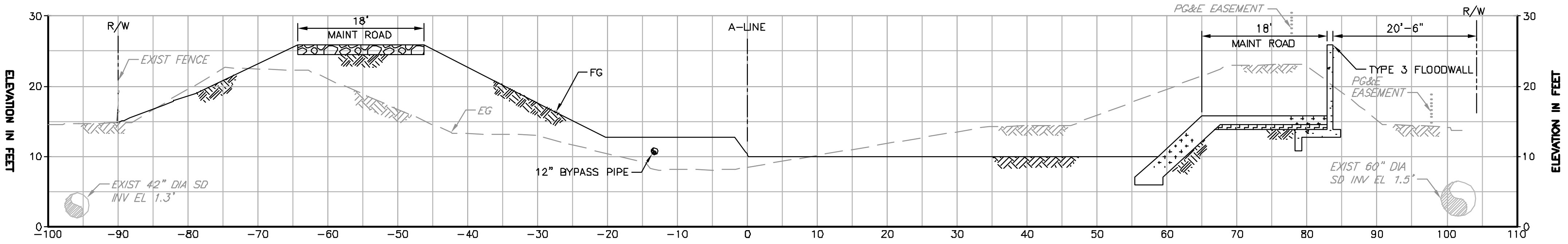
SHEET NUMBER:
67 OF 76



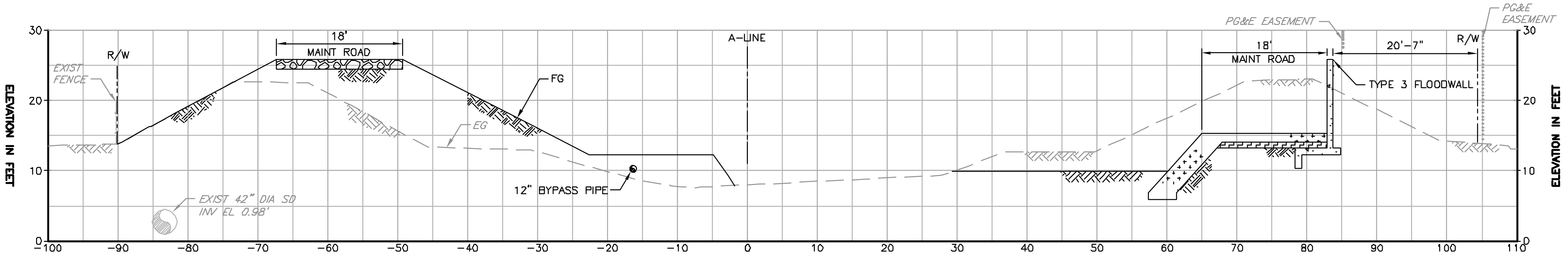
STA 51+50



STA 50+50



STA 50+00



STA 46+50

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
REGISTERED PROFESSIONAL ENGINEER
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL
STATE OF CALIFORNIA
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

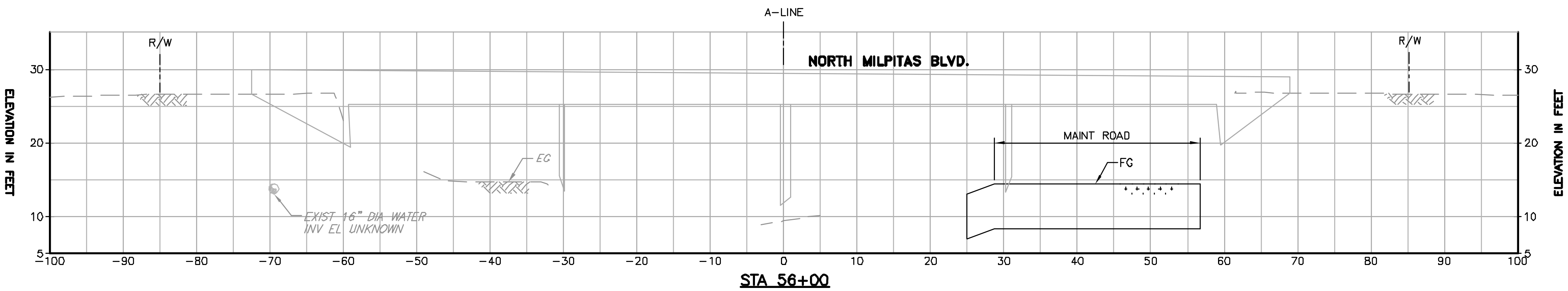
LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
STA 46+50 TO STA 51+50

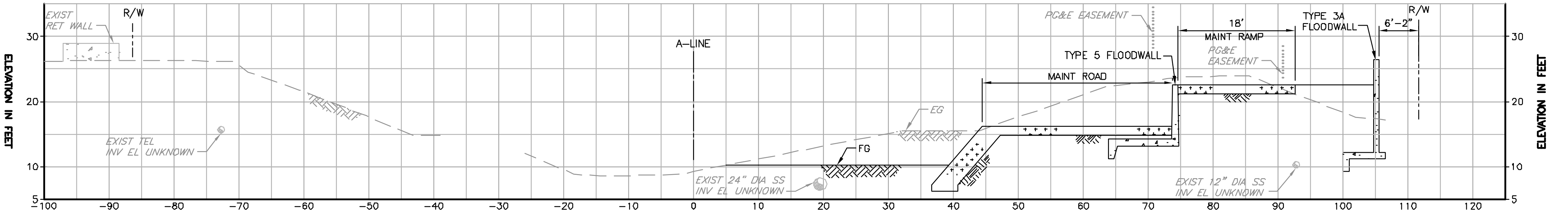
SCALE
H: 1"=10'
V: 1"=10'

VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

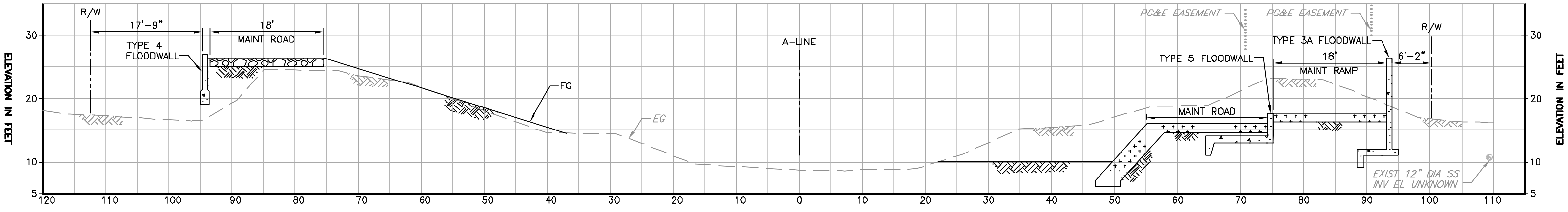
PROJECT NUMBER
40174004
SHEET CODE:
X-10
SHEET NUMBER:
68 OF 76



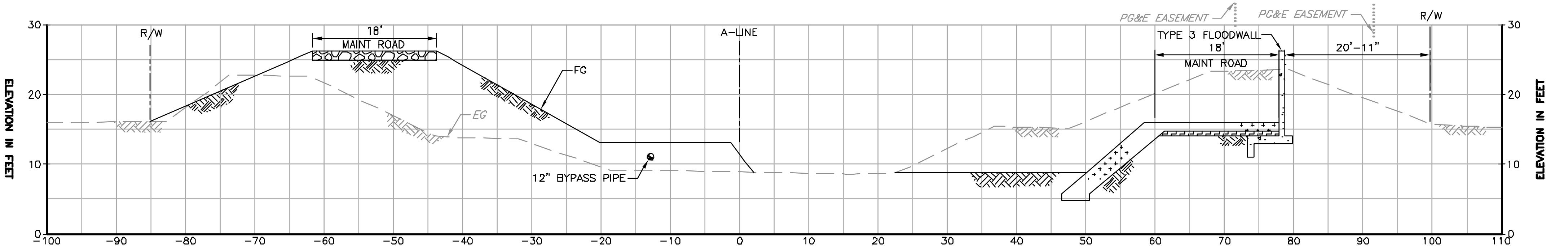
STA 56+00



STA 55+00



STA 54+50



STA 53+00

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE
JUNE 2011
DESIGN
B. TAN
DRAWN
J. FORD
CHECKED
T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

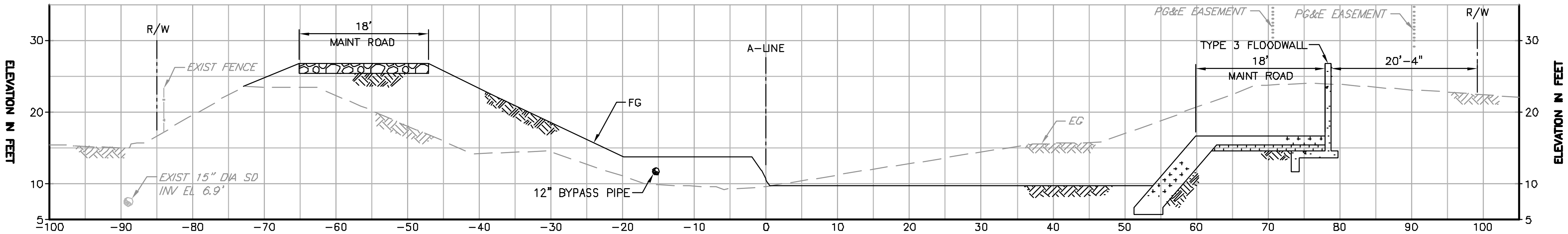
PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

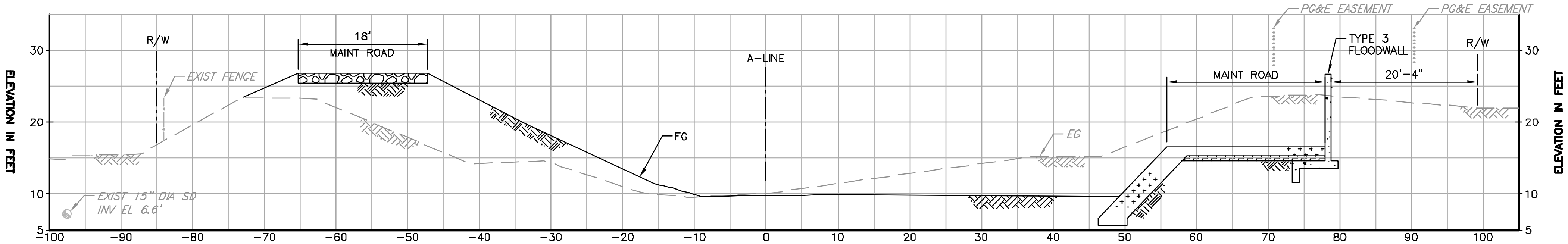
CROSS SECTIONS
STA 53+00 TO STA 56+00

SCALE
H: 1"=10'
V: 1"=10'
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

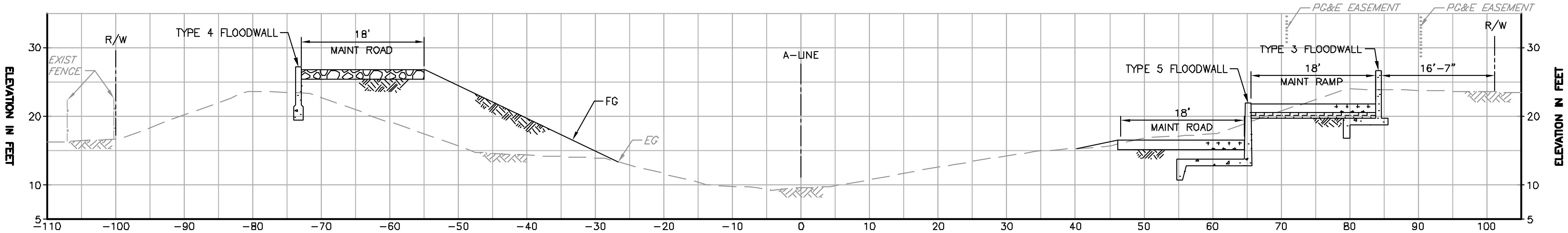
PROJECT NUMBER
40174004
SHEET CODE:
X-11
SHEET NUMBER:
69 OF 76



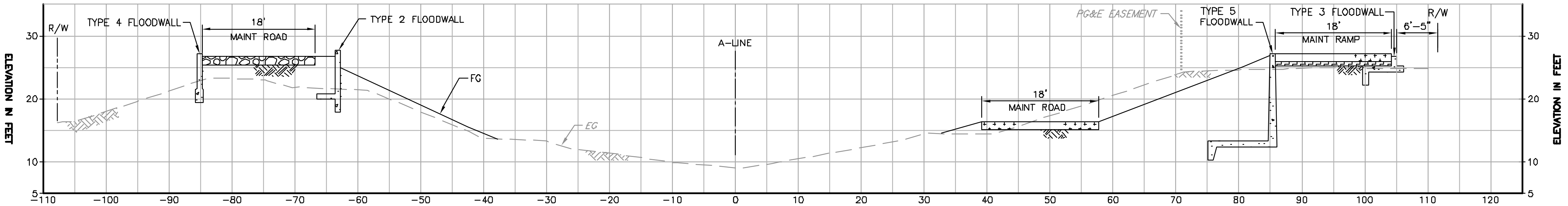
STA 59+50



STA 59+00



STA 58+00



STA 57+00

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE: JUNE 2011
DESIGN: B. TAN
DRAWN: J. FORD
CHECKED: T. NDAH

ENGINEERING CERTIFICATION
TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

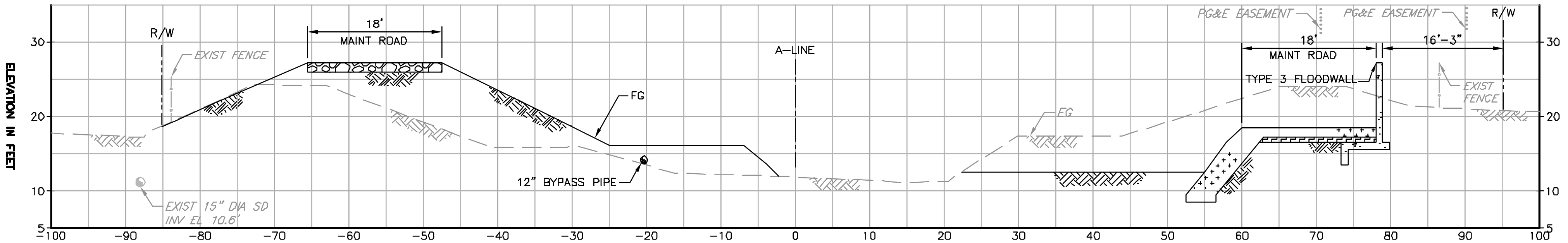
CROSS SECTIONS
STA 57+00 TO STA 59+50

SCALE
H: 1"=10'
V: 1"=10'

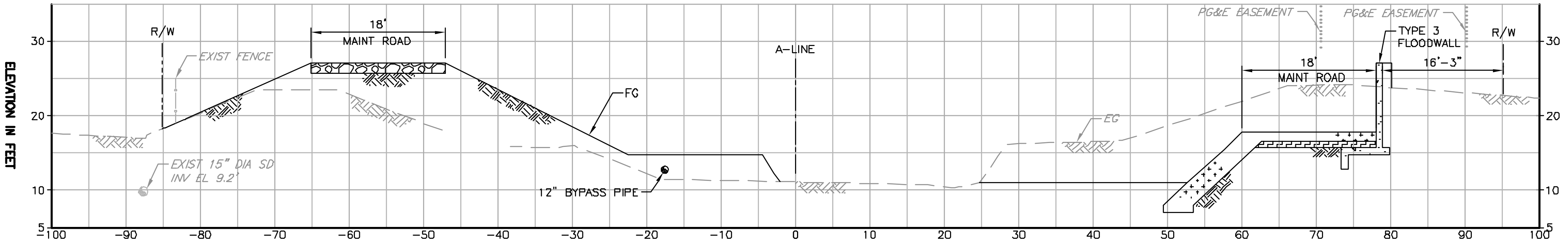
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER: 40174004
SHEET CODE: X-12
SHEET NUMBER: 70 OF 76

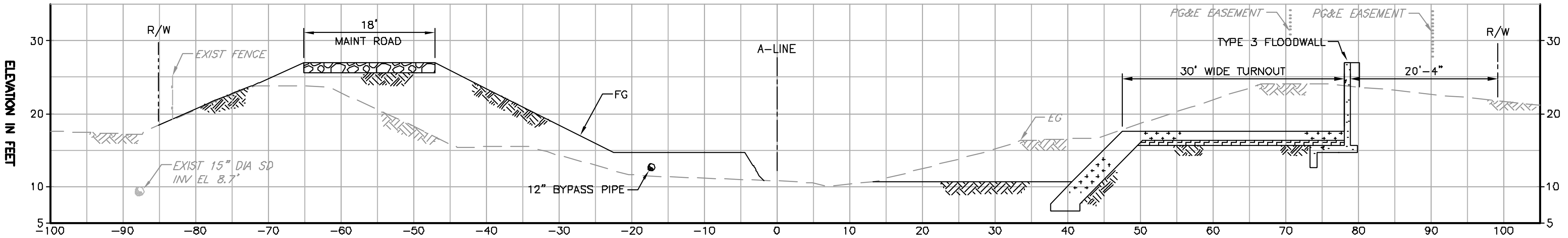
USERNAME: jennford Wed 06 Jul 2011 10:42am
FILENAME: K:\Active Projects\MP-40174004\Lower Berryessa Creek Project\Sheet\X-13



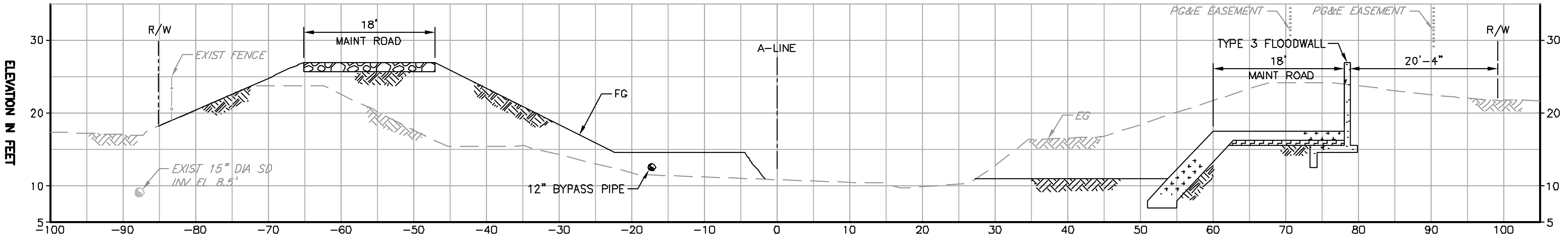
STA 68+50



STA 65+00



STA 64+00



STA 63+50

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06-24-11		

REFERENCE INFORMATION AND NOTES

DATE	JUNE 2011
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
STA 63+50 TO STA 68+50

SCALE
H: 1"=10'
V: 1"=10'

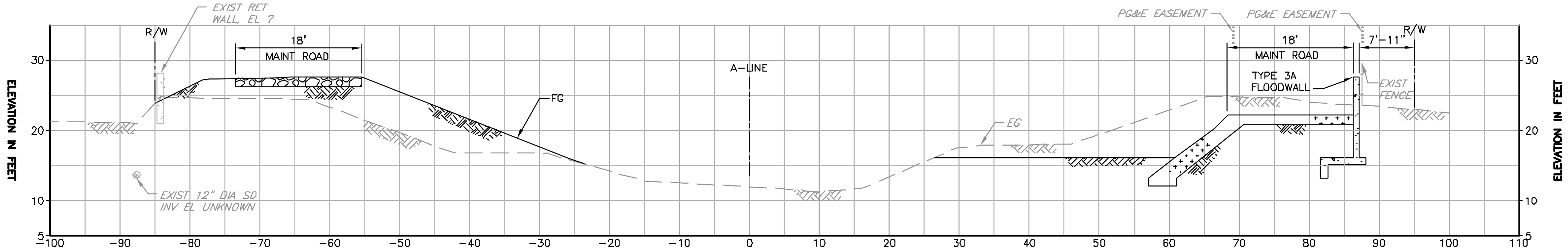
VERIFY SCALES
0 1"
BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

PROJECT NUMBER
40174004

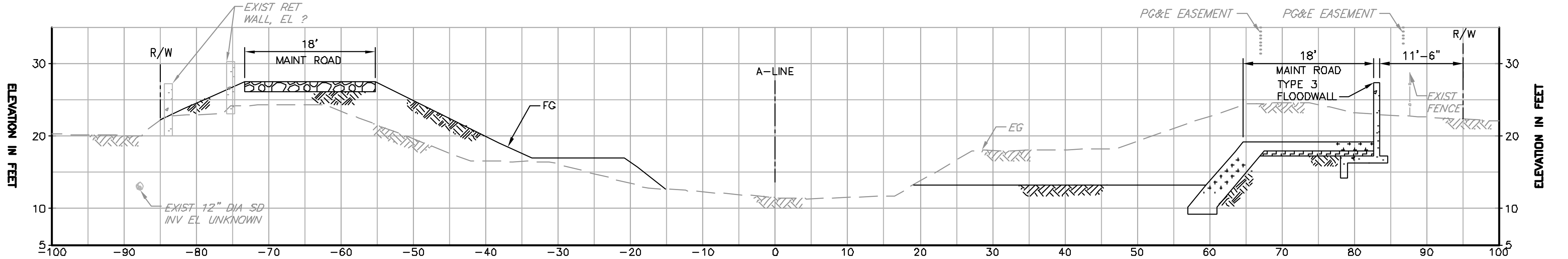
SHEET CODE:
X-13

SHEET NUMBER:
71 OF 76

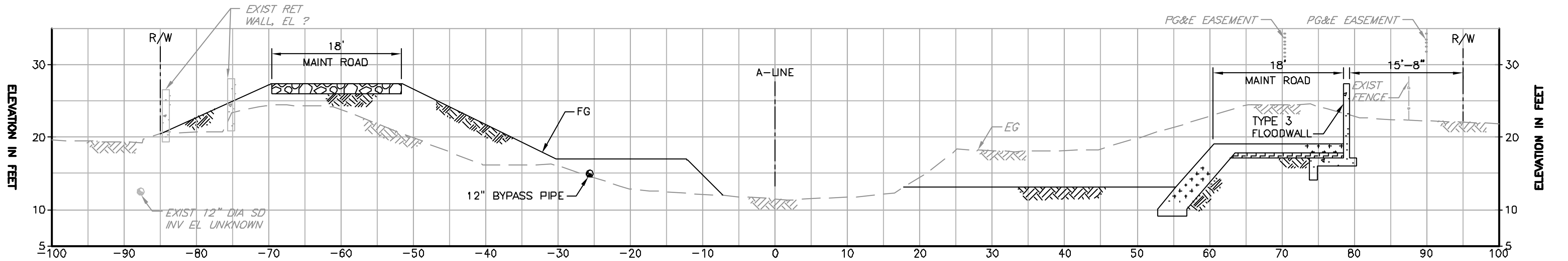
DOCUMENT NUMBER: BER_CY-X-4017-XXXXX



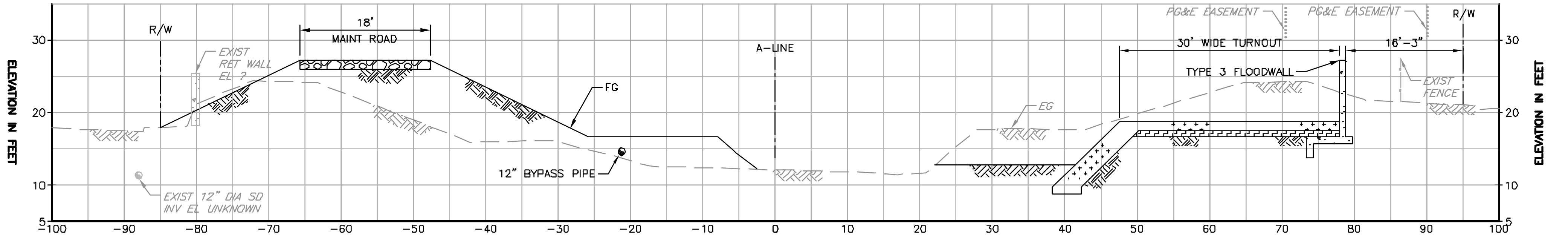
STA 71+00



STA 70+50



STA 70+00



STA 69+00

ALL CROSS SECTIONS ARE SHOWN LOOKING UPSTREAM

REV	DESCRIPTION	DATE	APPR.	REFERENCE INFORMATION AND NOTES
	60% PRELIMINARY 06-24-11			

DATE	
JUNE 2011	
DESIGN	B. TAN
DRAWN	J. FORD
CHECKED	T. NDAH

ENGINEERING CERTIFICATION

TONY TEGHEN NDAH
No. C67534
Exp. 06/30/11
CIVIL

PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
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PROJECT NUMBER
40174004

SHEET CODE:
X-14

SHEET NUMBER:
72 OF 76

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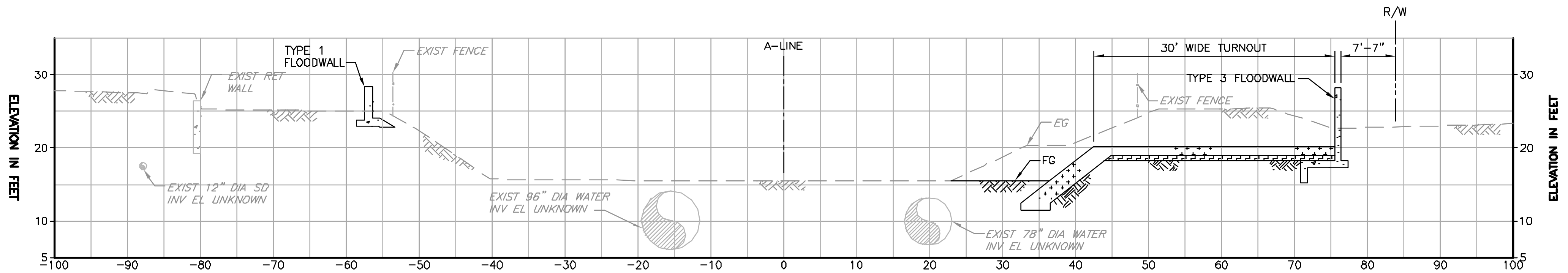

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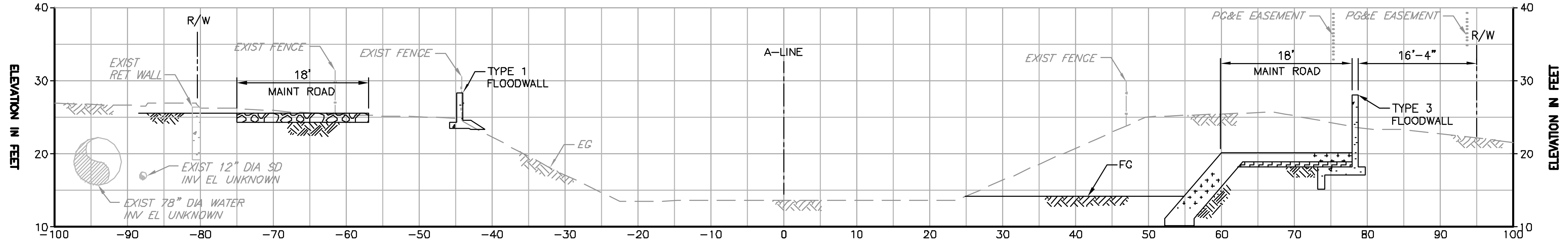

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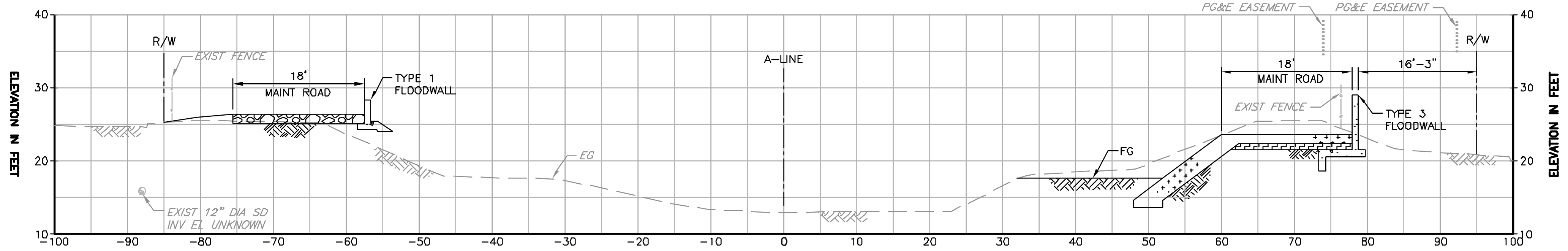

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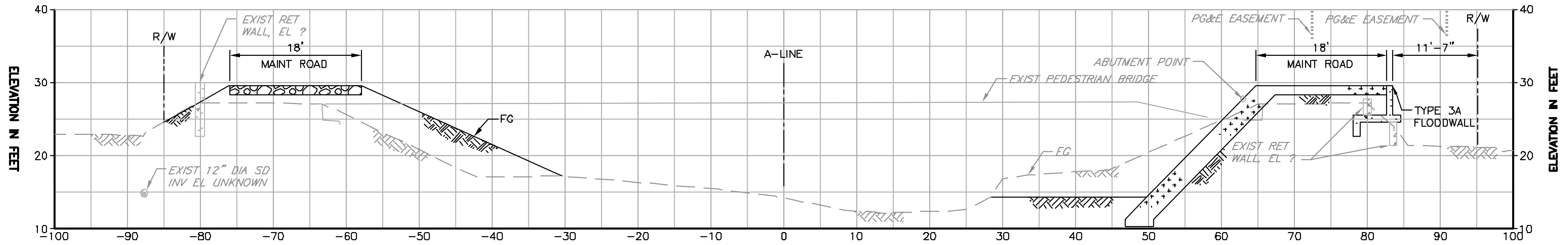

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LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
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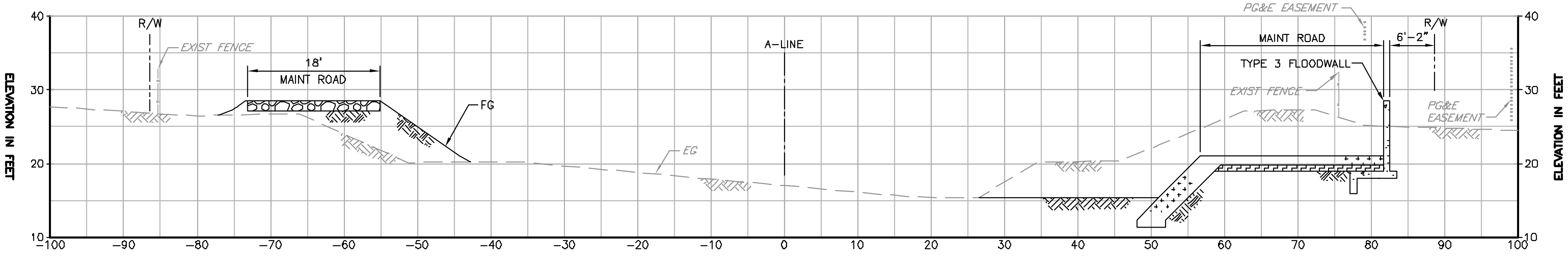
SHEET NUMBER: 73 OF 76



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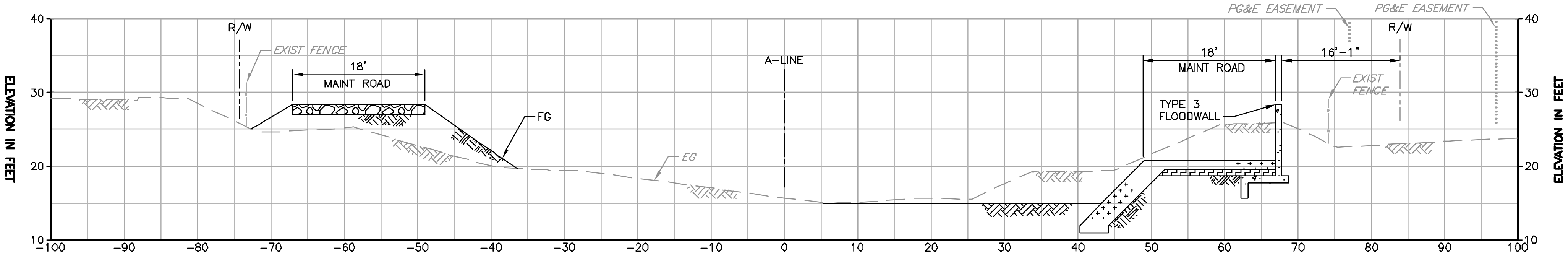

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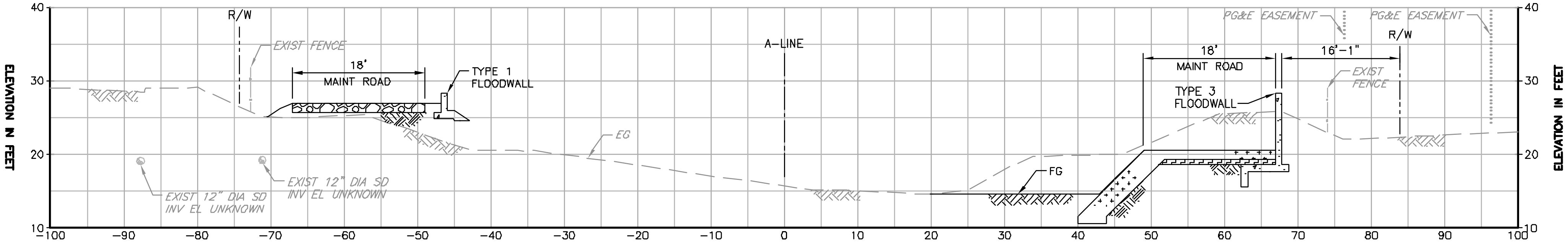

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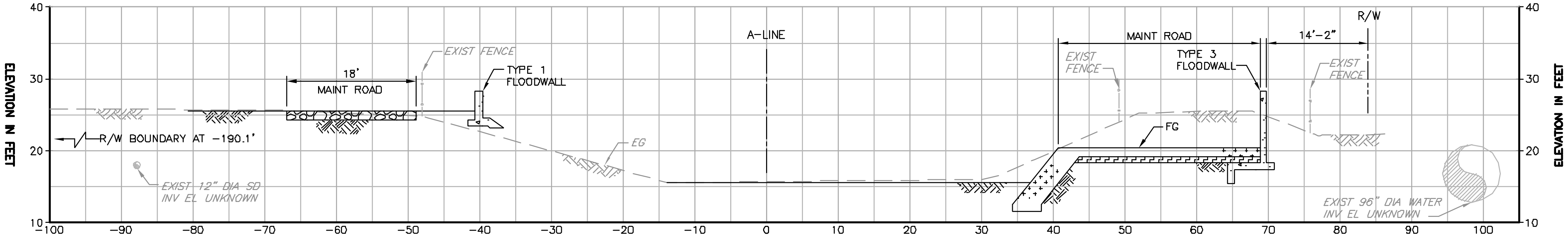

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DATE: JUNE 2011
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CHECKED: T. NDAH

ENGINEERING CERTIFICATION
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No. C67534
Exp. 06/30/11
PROJECT ENGINEER DATE

Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
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PROJECT NUMBER
40174004

SHEET CODE:
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SHEET NUMBER:
74 OF 76

DOCUMENT NUMBER: BER_CY-X-4017-XXXXX

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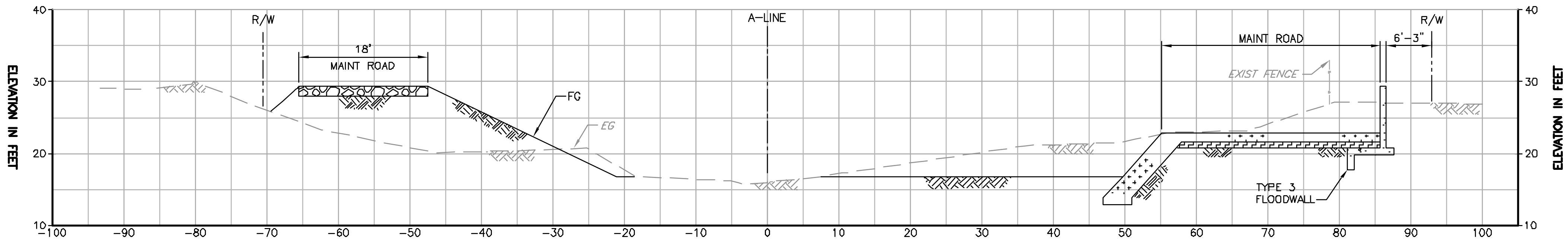

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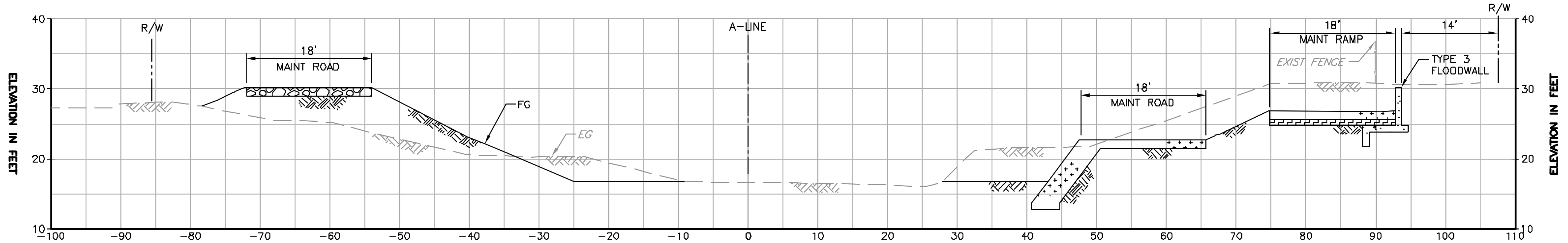

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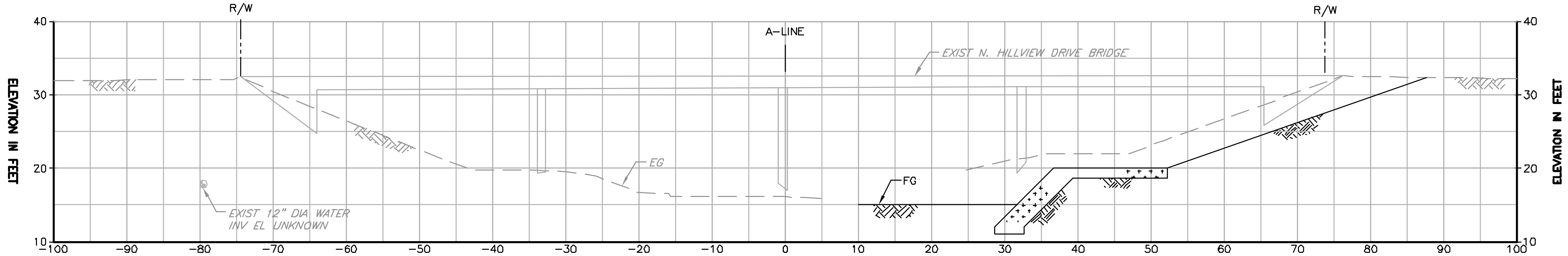

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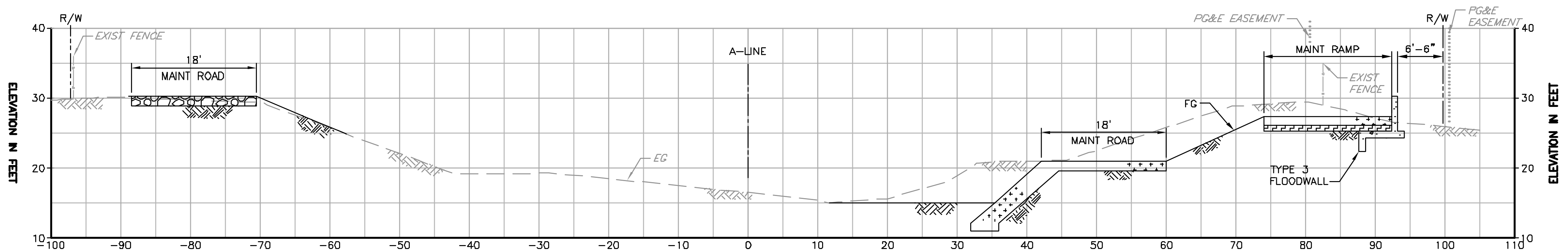

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LOWER BERRYESSA CREEK PROJECT

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PROJECT NUMBER
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SHEET CODE:
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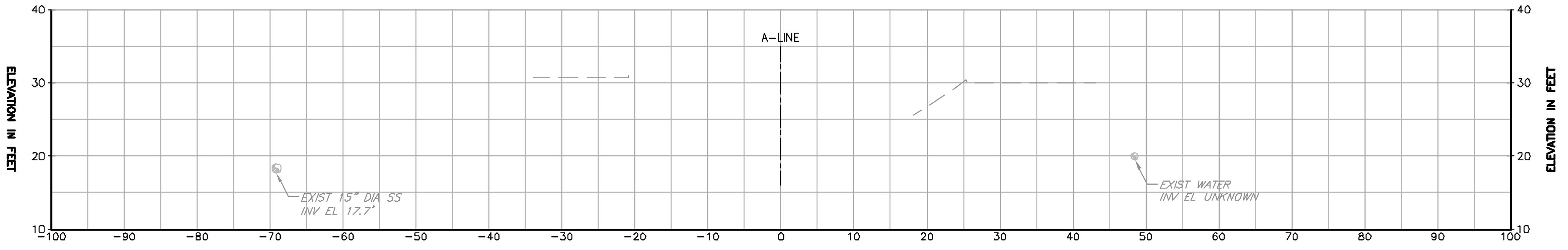
SHEET NUMBER:
75 OF 76



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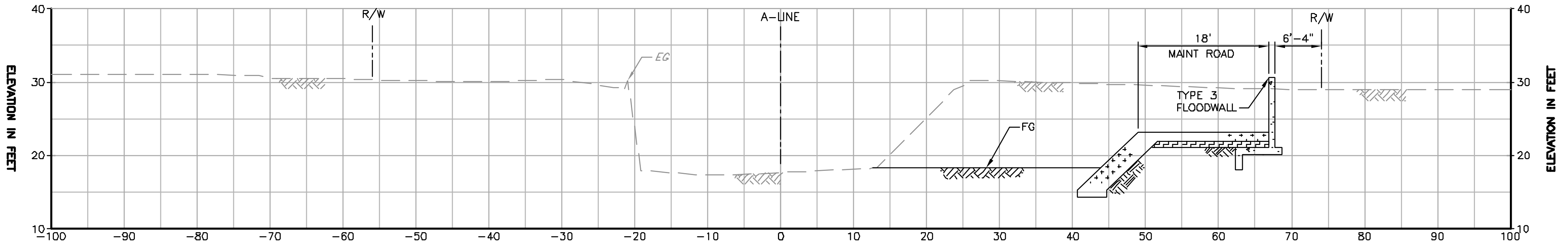

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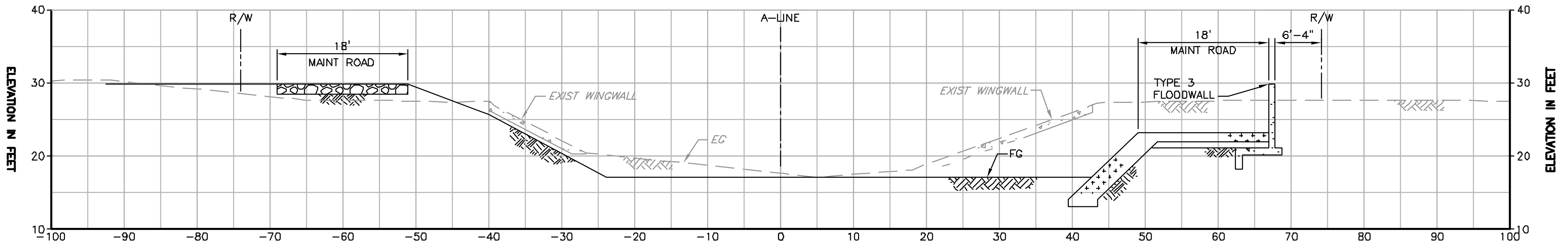

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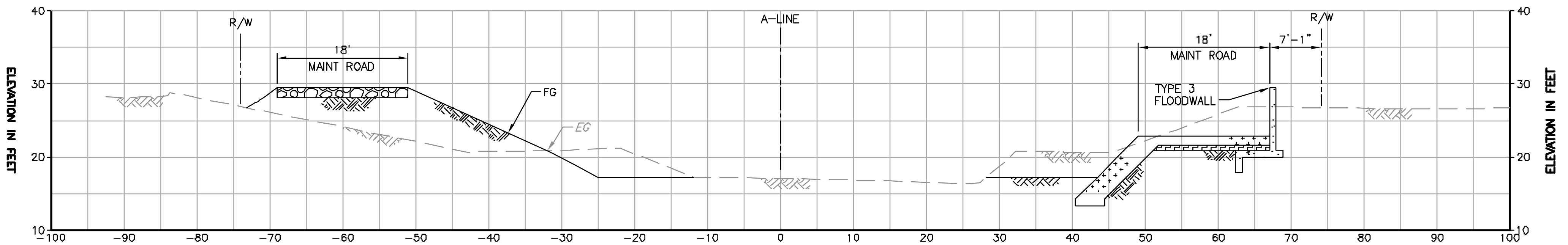

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REV	DESCRIPTION	DATE	APPR.
	60% PRELIMINARY 06–24–11		

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Exp. 06/30/11
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Santa Clara Valley Water District

PROJECT NAME AND SHEET DESCRIPTION:

LOWER BERRYESSA CREEK PROJECT

CROSS SECTIONS
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PROJECT NUMBER
40174004

SHEET CODE:
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76 OF 76

APPENDIX C

District Best Management Practices

Biological Resources		
BI-2	**Salvage Native Aquatic Vertebrates**	If native aquatic vertebrates are present when cofferdams, water bypass structures, and silt barriers are to be installed, native aquatic vertebrates will be relocated at the discretion of a qualified biologist to ensure that native aquatic vertebrates are not significantly impacted. A site by site evaluation of species present or potentially present and habitat conditions will be made by a qualified biologist. When native aquatic vertebrate relocation efforts are warranted, the operation will be based on the District's Fish Relocation Guidelines.
		Source: SMP Provision No. 3.7

Hazards & Hazardous Materials

HM-9	**Vehicle and Equipment Cleaning**	Vehicles will be washed only at the approved area in the corporation yard. No washing of vehicles will occur at job sites.
		Source: SMP Provision No. 4.5
HM-10	**Vehicle and Equipment Fueling**	No fueling will be done in a waterway or immediate flood plain, unless equipment stationed in these locations is not readily relocated (i.e., pumps, generators). 1. For stationary equipment that must be fueled on-site, containment will be provided in such a manner that any accidental spill of fuel will not be able to enter the water or contaminate sediments that may come in contact with water. 2. Any equipment that is readily moved out of the waterway will not be fueled in the waterway or immediate flood plain. 3. All fueling done at the job site will provide containment to the degree that any spill will be unable to enter any waterway or damage riparian vegetation.
		Source: SMP Provision No. 6.4
HM-11	**Vehicle and Equipment Maintenance**	No equipment servicing will be done in a stream channel or immediate flood plain, unless equipment stationed in these locations cannot be readily relocated (i.e., pumps, generators). 1. Any equipment that can be readily moved out of the channel will not be serviced in the channel or immediate flood plain. 2. All servicing of equipment done at the job site will provide containment to the degree that any spill will be unable to enter any channel or damage stream vegetation. 3. If emergency repairs are required in the field, only those repairs necessary to move equipment to a more secure location will be done in a channel or flood plain. 4. If emergency repairs are required, containment will be provided equivalent to that done for fueling or servicing.
		Source: SMP Provision No. 6.5
HM-12	**Hazardous Materials Management**	Measures will be implemented to ensure that hazardous materials are properly handled and the quality of water resources is protected by all reasonable means. 1. Prior to entering the work site, all field personnel will know how to respond when toxic materials are discovered. 2. The discharge of any hazardous or non-hazardous waste as defined in Division 2, Subdivision 1, Chapter 2 of the California Code of Regulations will be conducted in accordance with applicable State and federal regulations. 3. In the event of any hazardous material emergencies or spills, personnel will call the Chemical Emergencies/Spills Hotline at 1-800-510-5151.

Hazards & Hazardous Materials		
		Source: SMP Provision No. 6.3
HM-13	**Spill Prevention**	Prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water. 1. Field personnel will be appropriately trained in spill prevention, hazardous material control, and clean-up of accidental spills. 2. No fueling, repair, cleaning, maintenance, or vehicle washing will be performed in a creek channel or in areas at the top of a channel bank that may flow into a creek channel.
		Source: SMP Provision No. 6.1
HM-14	**Spill Kit Location**	Spill prevention kits appropriate to the hazard will always be in close proximity when using hazardous materials (e.g., crew trucks and other logical locations). 1. Prior to entering the work site, all field personnel will know the location of spill kits on crew trucks and at other locations within District facilities. 2. All field personnel will be advised of these locations and trained in their appropriate use.
		Source: SMP Provision No. 6.2

Hydrology/Water Quality

WQ-1	**Conduct Work from Top of Bank**	For minor work activities that will occur in the channel, work will be conducted from the top of the bank if access is available and there are flows in the channel.
		Source: SMP Provision No. 1.1
WQ-2	**Use of Wheel and Track Mounted Vehicles in Stream Bottoms**	Field personnel will use the appropriate equipment for the job that minimizes disturbance to the stream bottom. Appropriately-tired vehicles, either tracked or wheeled, will be used depending on the situation. Tracked vehicles (bulldozers, loaders) may cause scarification. Wheeled vehicles may cause compaction. Heavy equipment will not operate in the live stream.
		Source: SMP Provision No. 1.6
WQ-4	**Handle Sediments so as to Minimize Water Quality Impacts**	Sediments will be stored and transported in a manner that minimizes water quality impacts. 1. Wet sediments may be stockpiled outside of a live stream or may be stockpiled within a dewatered stream so water can drain or evaporate before removal. 2. This measure applies to saturated, not damp, sediments and depends upon the availability of a stockpile site. 3. For those stockpiles located outside the channel, water draining from them will not be allowed to flow back into the creek or into local storm drains that enter the creek, unless water quality protection measures recommended by the RWQCB are implemented. 4. Trucks may be lined with an impervious material (e.g. plastic), or the tail gate blocked with dry dirt or hay bales, for example, or trucks may drain excess water by slightly tilting their loads and allowing the water to drain out. 5. Water will not drain directly into channels (outside of the work area) or onto public streets without providing water quality control measures. 6. Streets will be cleared of mud and/or dirt by street sweeping (with a vacuum-powered street sweeper), as necessary, and not by hosing down the street.
		Source: SMP Provision No. 1.8
WQ-5	**Soil Stockpiles**	If soil is to be stockpiled, no run-off will be allowed to flow to a creek.
		Source: SMP Provision No. 1.9

Hydrology/Water Quality		
WQ-12	**Diversion/ Bypass Water at Non-tidal Sites**	When work in a flowing stream is unavoidable, the entire streamflow will be diverted around the work area by a barrier. Construction of the barrier will normally begin in the upstream area and continue in a downstream direction, and the flow will be diverted only when construction of the diversion is completed. The water diversion plan will allow stream flows to gravity flow around or through the work site using temporary culverts or stream flow is pumped around the work site using pumps and screened intake hoses. Coffer dam construction will be adequate to prevent seepage into or from the work area. Coffer dams will be constructed of river run gravel with a fines content that is less than 15%. Fines are defined as material that is able to pass through a #20 sieve. Coffer dams may also be constructed of sheet piles, inflatable dams, or sand bags. Coffer dams will be installed both upstream and downstream not more than 100 feet from the extent of the work areas. In-channel berms that only deflect water to one side of the channel during sediment removal may be constructed of channel material. The enclosure and the supportive material will be removed when the work is completed and the removal will normally proceed from downstream in an upstream direction. Normal flows will be restored to the affected stream immediately upon completion of work at that location: 1. All water will be discharged in a non-erosive manner (e.g., gravel or vegetated bars, on hay bales, on plastic, on concrete, or in storm drains when equipped with filtering devices, etc.). 2. Sumps or basins may also be used to collect water, where appropriate (e.g., in channels with low flows). 3. Where feasible and appropriate, diversion structures will be installed on concrete sections of the channels or constructed of materials specified above. Earth fill will not be used for cofferdams in non-tidal areas. 4. In conjunction with diversion structures, pumps or gravity-fed pipe systems will be used to dewater sites. 5. Depending on the channel configurations, sediment removal may occur where the flows are not bypassed around the work site; as long as during excavation activities, a berm of sediment is left between the work area and stream flows to minimize water quality impacts. 6. Diversions will maintain ambient stream flows below the diversion, and waters discharged below the project site will not be diminished or degraded by the diversion.
		Source: SMP Provision No. 1.3
WQ-14	**Seeding**	For banks that are scraped, an erosion control seed mix will be used. Temporary earthen access roads will be seeded when site

Hydrology/Water Quality

		and horticultural conditions are suitable.
		Source: SMP Provision No. 2.7
WQ-15	**Groundwater Management**	If high levels of groundwater in a work area are encountered, the water will be pumped out of the work site. If necessary to protect water quality, the water will be directed into specifically constructed infiltration basins, into holding ponds, or onto areas with vegetation to remove sediment prior to the water re-entering a receiving water body. Water pumped into vegetated areas will be pumped in a manner that will not create erosion around vegetation.
		Source: SMP Provision No. 1.12
WQ-16	**Avoid Erosion When Restoring Flows**	All temporary diversion structures and the supportive material will be removed no longer than 48 hours after work is completed. The removal will normally proceed from downstream in an upstream direction. Normal flows will be restored to the affected stream immediately upon completion of work at that location. Flows will be restored in a manner that minimizes erosion. 1. When diversion structures are removed, to the extent practicable, the ponded flows will be directed into the low-flow channel within the work site to minimize downstream water quality impacts. 2. Flows will gradually be restored to the channel to avoid a surge of water that would cause erosion or scouring. 3. Bypassed flows may be slowly reintroduced into the dewatered area by leaving a silt barrier in place to allow water to slow and drop sediment to the extent possible.
		Source: SMP Provision No. 1.4

Hydrology/Water Quality		
WQ-17	**Prevent Scour Downstream of Sediment Removal**	Sites in the transport zone on alluvial fans may cause increased scour downstream if they experience rapid sediment accumulation after sediment removal. Channel reaches up to 500 feet downstream from such sediment removal sites will be monitored to determine whether accelerated erosion is occurring. If downstream monitoring indicates that erosion is occurring, then remedial action such as rock vortex weirs or similar protection will be carried out.
		Source: SMP Provision No. 1.13
WQ-26	**Silt Fence Culvert Entrance Protection**	To reduce flow velocity of runoff, allowing sediment to settle out before discharge enters a culvert and its drainage system: 1. Install silt fence culvert protection in appropriate locations: a. Where sheet and rill erosion would occur. b. Where protection of adjacent property or areas is needed. c. Where the maximum slope length behind the silt fence is 100 feet (30 meters) and the maximum slope gradient is 50% (2:1). d. Where the flow volume does not exceed 1 cfs. e. Where ponded water will not damage adjacent areas or structures, or create a traffic hazard or other nuisance. 2. Select the correct construction materials: a. Select a woven or non-woven filter fabric made of at least 85% by weight, ethylene, propylene, amide, ester, or vinylidene yarn. b. The Equivalent Opening size of the filter fabric (U.S. Standard Sieve) will be 70-100, and the tensile strength will be at least 120 lbs (54 kg) if a wire support fence is used and 200 lbs (90 kg) if a wire support fence is not used. c. Posts should be either 4-inch diameter wood or 1.33 pounds per linear foot steel. Posts should be at least 5 feet long. Steel posts should have projections for fastening wire. d. Wire fence reinforcement will be a minimum of 42 in (1.1 m) tall and a minimum width of 14-gauge. The maximum mesh spacing should be 6 in (15 cm). 3. Construct the silt fence properly: a. The height of the silt fence should be between 16 in (40 cm) and 36 in (90 cm). The most effective height range is 24 to 36 in (60 to 90 cm). Shorter fences may be breached during small discharges and require more maintenance.

Hydrology/Water Quality

		b. If possible, cut the filter fabric from a continuous roll to avoid the use of joints. If joints are necessary, splice the filter fabric only at a support post. Overlap the fabric pieces a minimum of 6 in (15 cm) and secure both ends to the post. c. If a wire mesh support fence is used, install posts at least 3 feet (1 meter) apart. Install posts closer together if a support fence is not used. Drive posts into the ground to a depth of at least 1 foot (30 cm). d. Excavate a 4-in (10 cm) deep trench that is at least 4 in (10 cm) wide upslope of the silt fence along the line of posts.
		Source: Water Utility Discharge Pollution Prevention Plan BMP CM-F
WQ-29	**Discharge Storm Drain Curb & Drop Inlet Protection**	To install temporary devices around drain inlets using gravel, wire mesh, and /or concrete blocks that may prevent sediment-laden runoff from entering the storm drain system or watercourses (These devices reduce the velocity of runoff, allowing sediments to settle. The gravel can also filter out coarse sediment from runoff.): 1. Use drain inlet protection in appropriate locations: a. Use in drainage areas less than one acre. b. Place anywhere sediment-laden runoff could discharge into a storm drain inlet. c. If the inlet protection device could pond water, install only where ponded water will not contact materials, flood structures, or cause a nuisance. d. Completely cover inlet where work activities could result in vegetation, raw materials or sediment being deposited into the inlet, or when a small spill occurs near the inlet. Cover inlets with rubber or polyurethane mats, or plastic sheeting anchored with gravel bags. 2. Install inlet protection properly: a. To prevent seepage of sediment-laden runoff into he drain inlet, install drain inlet protection so there are no gaps around the drain inlet. b. Do not place filter fabric over the inlet grate as it can become clogged with sediment and contribute to flooding. 3. Gravel and Wire Mesh Drop Inlet Protection: a. Place wire mesh over the inlet so the wire extends a minimum of 12 inches beyond each side of the inlet structure. Use hardware cloth or comparable wire mesh with ½-inch openings. If more than one mesh strip is

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required, overlap the strips.

   b. Pile ¾ to 3-inch washed gravel on top of the mesh surrounding the inlet to a minimum depth of 12 inches. Extend the gravel at least 18 inches beyond the inlet on all sides.

4. Gravel and Wire Mesh Curb Inlet Protection:
   a. Place wire mesh over the inlet so the wire extends a minimum of 12 inches beyond each side of the inlet structure. Use hardware cloth or comparable wire mesh with ½-inch openings.
   b. Pile ¾ to 3-inch washed gravel against the mesh to anchor it against the gutter and inlet cover and to surround the inlet completely.
5. Block and Gravel Curb Inlet Protection:
   a. Place two concrete blocks on their sides abutting the curb at either side of the inlet opening. These are the space blocks.
   b. Place a 2-inch by 4-inch stud through the outer holes of each spacer block to align the front blocks.
   c. Place more concrete blocks on their sides across the front of the inlet and abutting the spacer blocks. Do not use mortar.
   d. Place wire mesh with ½-inch openings over the outside vertical face of the blocks to keep gravel out of the inlet.
   e. Place ¾ to 3-inch washed gravel against the wire mesh to the top of the blocks, on slopes of 2:1 or flatter.
6. Block and Gravel Drop Inlet Protection:
   a. Place wire mesh over the inlet so the wire extends a minimum of 12 inches beyond each side of the inlet structure. Use hardware cloth or comparable wire mesh with ½-inch openings. If more than one mesh strip is required, overlap the strips.
   b. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so the open end face outward not upward. Abut the ends of the adjacent blocks.
   c. Stack blocks to at least 12 inches but not more than 24 inches above the inlet, depending on design requirements.
   d. Place wire mesh with ½-inch openings over the outside vertical face of the blocks to keep gravel out of the inlet.
   e. Place ¾ to 3-inch washed gravel against the wire mesh to the top of the blocks, on slopes of 2:1 or flatter.

Hydrology/Water Quality

7. Gravel Bag Barriers:
    a. Use bags made of geotextile fabric, not burlap. Fill bags with washed ¾-inch rock or ¼-inch pea gravel.
    b. Place gravel bags around the perimeter of the drop inlet, packing bags together tightly. For a cub inlet, abut the curb at either side of the inlet opening.
    c. If additional flow retention is required, construct a barrier upgradient of the inlet by placing gravel bags perpendicular to the direction of flow. Overlap the bags and pack them tightly together. Construct each barrier using several layers of bags. Leave a one bag gap on the top row to act as a spillway to prevent flooding. If more than one barrier is used, place barriers at 20-foot intervals.
8. Wooden Weir (and Fabric) Curb Inlet Protection:
    a. Construct a wooden weir using 2-inch by 4-inch construction grade lumber, with a total length equal to the throat length plus 2 feet.
    b. Attach a continuous piece of wire mesh of at least 30 inches in width and a length equal to the inlet's throat length plus 4 feet.
    c. Place a piece of approved "extra strength" filter cloth, equal to the dimensions of the wire mesh, over the mesh and secure it to the weir.
    d. Nail the weir to the 9-inch long vertical spacers, which will be located between the weir and the inlet face at no more than 6-foot intervals.
    e. Place the assembly against the inlet throat and nail 2-inch by 4-inch boards, in minimum lengths of 2 feet, to the top of the weir at the spacers. Extend these anchors across the inlet tops and hold them in place by sandbags or alternate weight.
    f. Place the assembly such that the end spacers are at lest 1 foot beyond both ends of the throat opening.
    g. Form the mesh and cloth to the concrete gutter and against the face of the curb on both sides of the inlet. Place coarse aggregate over the mesh and cloth so that water is prevented from entering the inlet either under or around the filter fabric.
9. Inspection and Maintenance:
    a. Let ponded water evaporate provided it does not cause a nuisance.
    b. Inspect before anticipated storms and after storms for gaps, clogging of gravel, ruptured gravel bags, and

Hydrology/Water Quality

		sediment accumulated behind inlet protection. During extended rainfall events, inspect at least once every 24 hours. c. Carefully remove accumulated sediment when the depth reaches half the height of the inlet protection device. Dispose of sediment properly. d. Clean or replace gravel that is clogged with sediment. Do not clean gravel near the inlet.
		Source: Water Utility Discharge Pollution Prevention Plan BMP CM-E
WQ-40	**Water Pollution Control**	Oily, greasy, or sediment laden substances or other material that originate from the project operations and may degrade the quality of surface water or adversely affect aquatic life, fish, or wildlife will not be allowed to enter, or be placed where they may later enter, any waterway. The project will not increase the turbidity of any watercourse flowing past the construction site by taking all necessary precautions to limit the increase in turbidity as follows: 1. where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases will not exceed 5 percent; 2. where natural turbidity is greater than 50 NTU, increases will not exceed 10 percent; 3. where the receiving water body is a dry creek bed or storm drain, waters in excess of 50 NTU will not be discharged from the project. Water turbidity changes will be monitored. The discharge water measurements will be made at the point where the discharge water exits the water control system for tidal sites and 100 feet downstream of the discharge point for non-tidal sites. Natural watercourse turbidity measurements will be made in the receiving water 100 feet upstream of the discharge site. Natural watercourse turbidity measurements will be made prior to initiation of project discharges, preferably at least 2 days prior to commencement of operations.
		Source: District Special Provisions Guidelines Article 15.01
WQ-41	**Stormwater Pollution Prevention**	Suitable erosion control, sediment control, source control, treatment control, material management, and non-stormwater management BMPs will be implemented consistent with the latest edition of the California Stormwater Quality Association “Stormwater Best Management Practices Handbook,” which is available at www.cabmphandbooks.com.
		Source: District Special Provisions Guidelines Article 16.01

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United States Environmental Protection Agency. 2000. Pesticides and Toxic Substances (H-7506C), Protecting Endangered Species - Interim Measures for Use of Pesticide in Santa Clara County.

APPENDIX D

Photographs of the Action Area

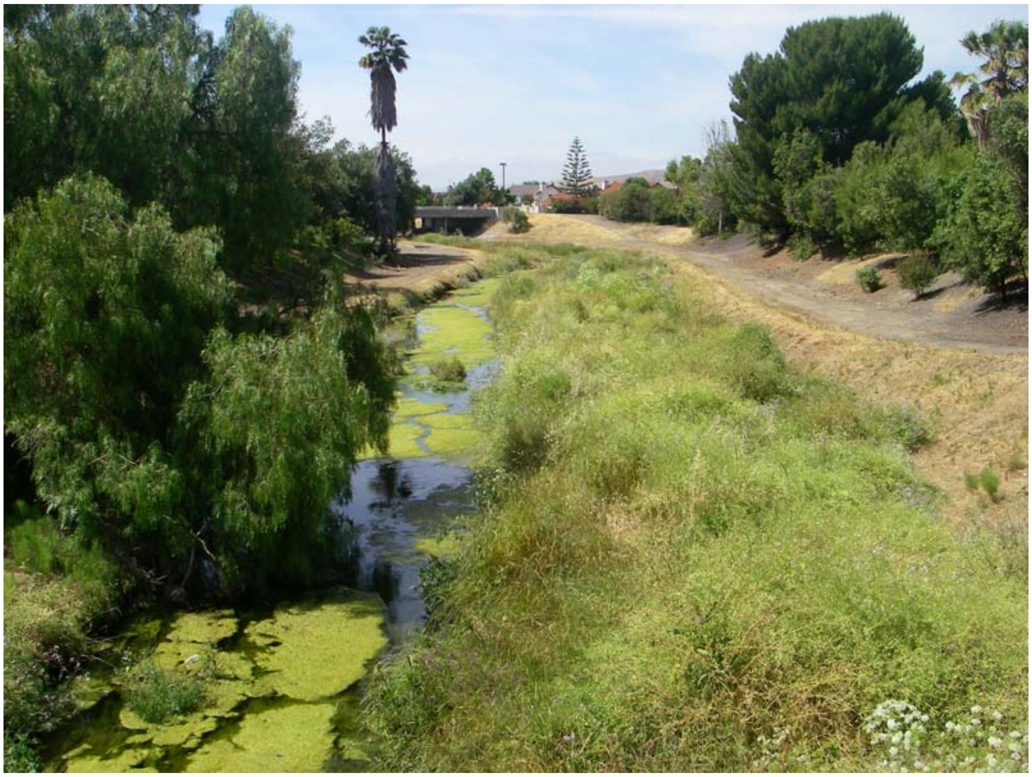

Photo 1: Facing downstream Berryessa Creek at Calaveras Road bridge (southern edge of action area) (June 9th, 2010)

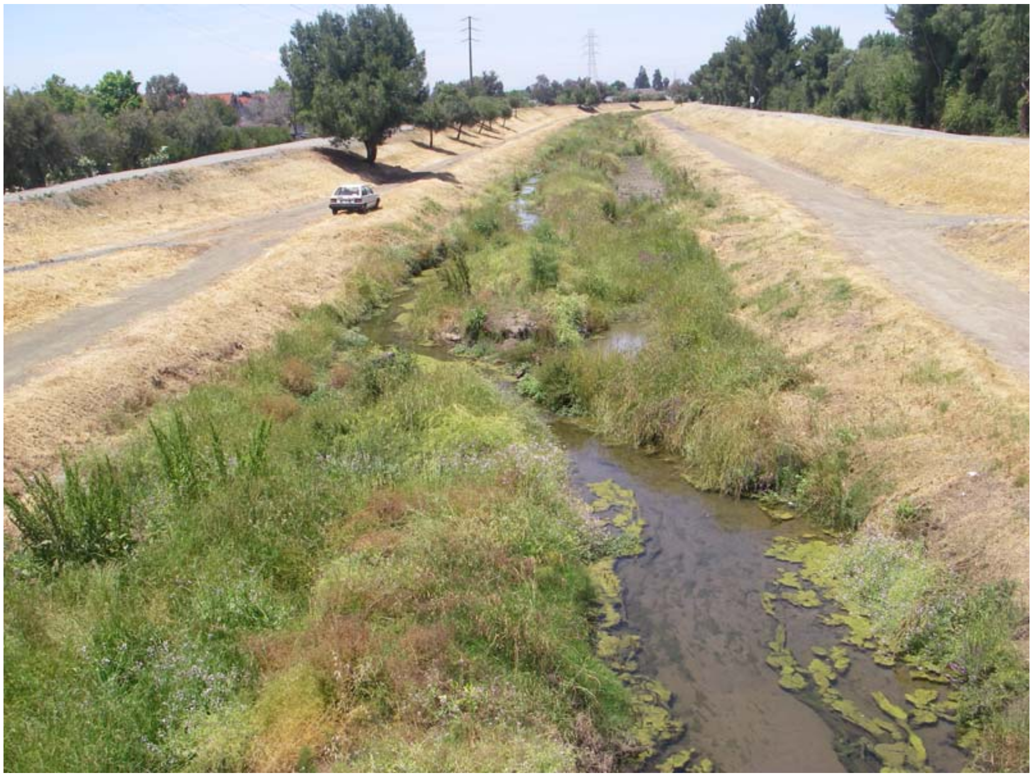

Photo 2: Facing downstream Berryessa Creek (June 9th, 2010)

SOURCE: ESA

Figure D-1
Representative Photographs

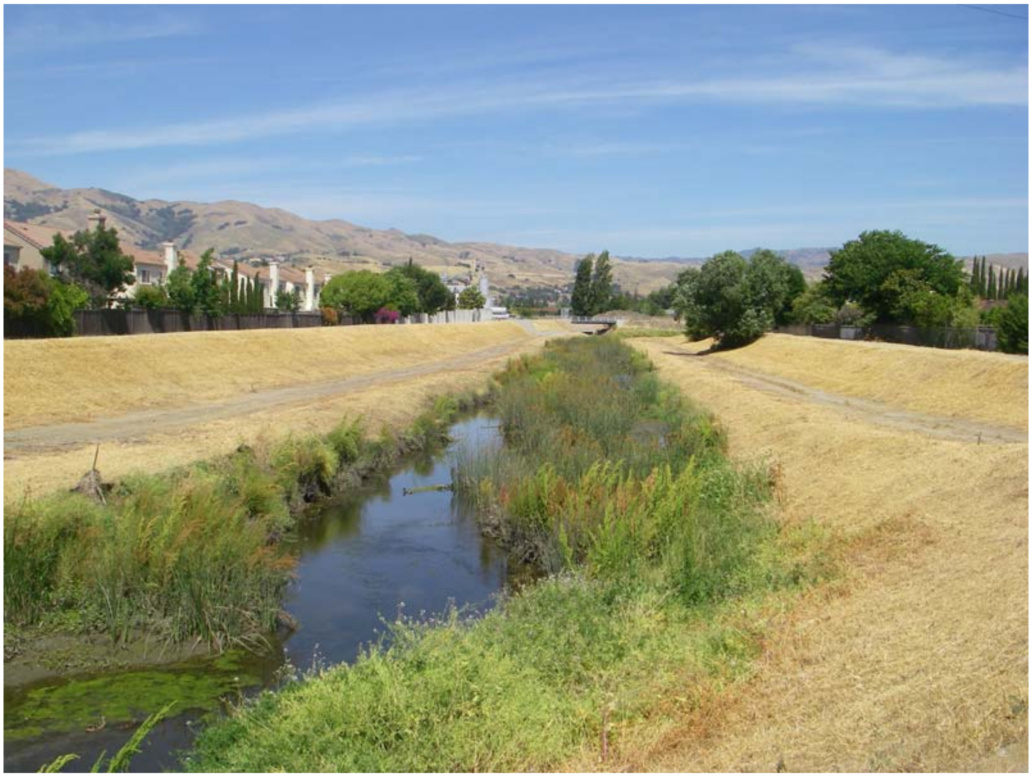

Photo 3: Facing upstream Berryessa Creek at the confluence with Calera Creek (June 9th, 2010)

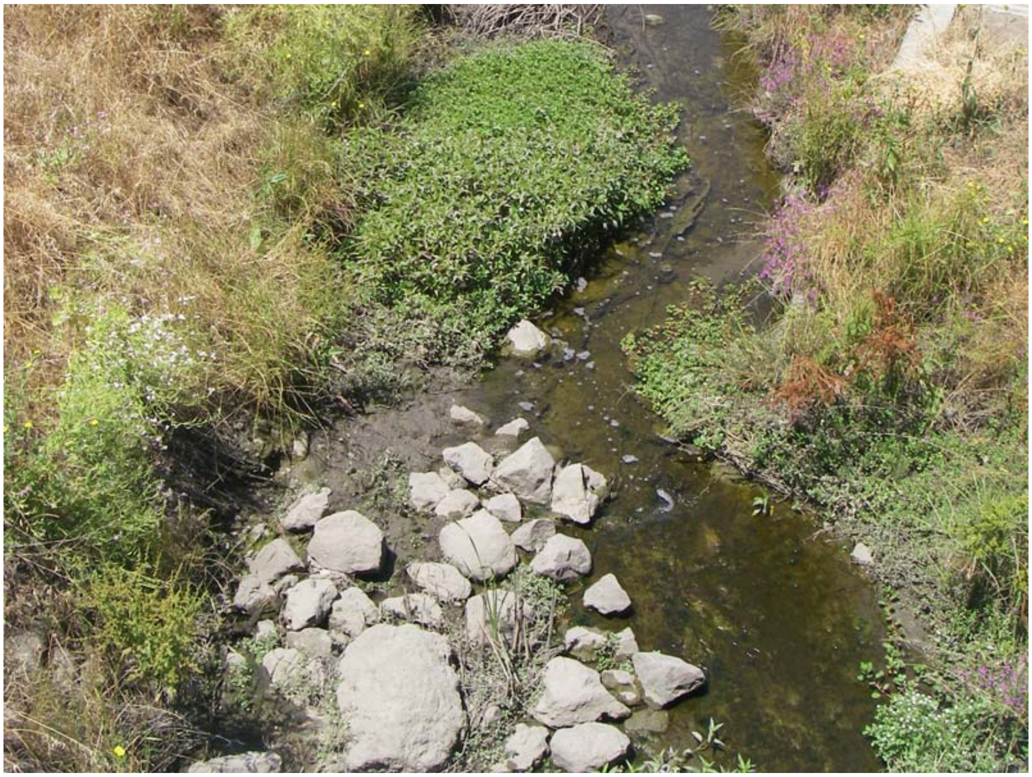

Photo 4: Calera Creek at the confluence with Berryessa Creek (June 9th 2010)

SOURCE: ESA

Figure D-2
Representative Photographs

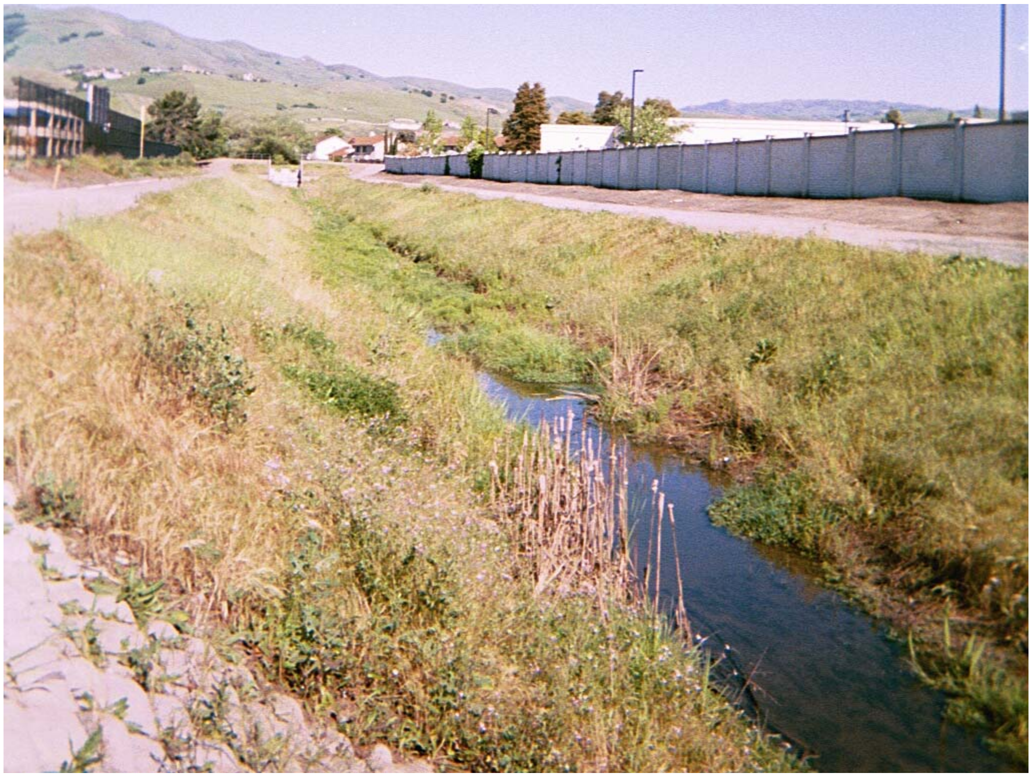

Photo 5: Calera Creek looking upstream from Arizona Avenue (April 6 2005)

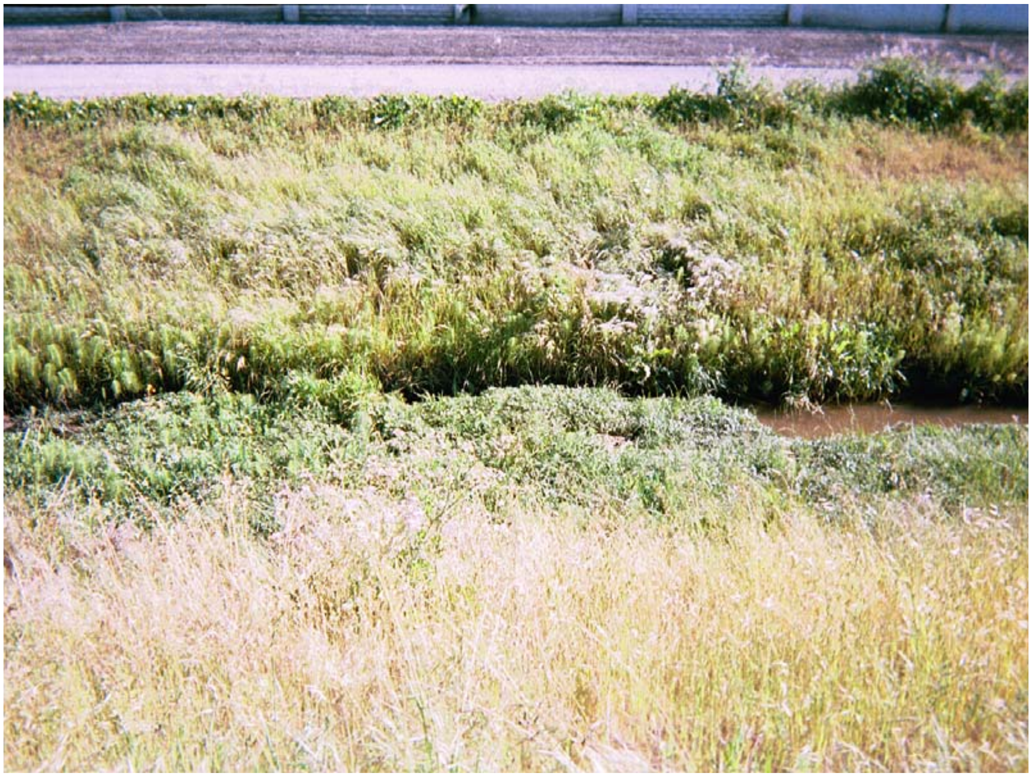

Photo 6: Calera Creek channel and vegetation between Arizona Avenue and the drop structure at Milpitas High School (April 6 2005)

SOURCE: ESA

Berryessa Creek Levee Project . 201425

Figure D-3
Representative Photographs